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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

THE SAVILL LECTURE on Migraine. By ARTHUR F. HURST, M.A., M.D., F.R.C.P. 1

AN ADDRESS on the Therapeutic Uses of High Carbohydrate Diets. By T. IZOD BENNETT, M.D., M.R.C.P. 6

AN ADDRESS on Chronic Lead Poisoning Among Pottery Workers. By FRANK SHUFFLEBOTHAM, M.D., M.R.C.P. 52

ORIGINAL ARTICLES.

Splanchnic Analgesia. By O. STANLEY HILLMAN, M.B., B.S., F.R.C.S. 9

Flocculation and Complement Fixation in Syphilis. By E. W. TODD, M.D., D.P.H.—(*Illustrated*) 12

Diagnosis and Treatment of Diabetes Mellitus in Hospital and General Practice. By EDWIN G. B. CALVERT, M.D., M.R.C.P., D.P.H.—(*Concluded*) 14

CLINICAL AND LABORATORY NOTES.

Hepatic Abscess as a Complication of Appendicitis. By E. G. SLESINGER, M.S., F.R.C.S. 19

An Unusual Case of Primary Carcinoma of Liver. By E. W. JOHNSON, L.R.C.P., L.R.C.S. 19

MEDICAL SOCIETIES.

Royal Society of Medicine: Sections of Laryngology and Otology: Summer Congress. 20

Section of Urology: Polycystic Disease of the Kidney 21

REVIEWS AND NOTICES OF BOOKS.

Encephalitis Lethargica. By Prof. Arthur J. Hall, M.D., F.R.C.P. 23

Laboratory Diagnosis of Syphilis. By Hideyo Noguchi, M.D., Ph.D., D.Sc. 24

Le Problème de l'Anaphylaxie. By Auguste Lumière 24

Körperstellung. By Prof. R. Magnus 24

The Science and Art of Anæsthesia. By Col. W. Webster, M.D. 24

Biology of the Internal Secretions. By Prof. Francis X. Dercum, M.D., Ph.D. 25

Sexualité et Hormones. By Prof. Ch. Champy 25

Thoraxschnitte von Erkrankungen Der Brustorgane. By Prof. Walter Koch ... 25

Chemical Encyclopædia. By C. T. Kingzett 25

The Vegetable Proteins. By Thomas B. Osborn, Ph.D. 25

Analyses de chimie biologique. By Rene Clogne 25

Protoplasmic Action and Nervous Action. By Ralph S. Lillie 26

The Men's House. By J. Fort Newton 26

Symbolical Masonry. By H. L. Haywood 26

The Great Teachings of Masonry. By H. L. Haywood 26

LEADING ARTICLES.

MUNICIPAL AND HOME DISINFECTION 27

ARTIFICIAL LIMBS 27

THE RELIEF OF ASTHENOPIA 28

THE SCOTTISH BOARD OF HEALTH 28

ANNOTATIONS.

The Museum of the Royal College of Surgeons of England 29

The Treatment of Infected Teeth 29

Midwives and Jury Service. 30

Splanchnic Anæsthesia 30

Mosquito Control at Hayling Island 30

Dental Jurisprudence 31

The Treatment of Venereal Adenitis by Solar Rays .. 31

The Prevention of Aeroplane Crashes 31

Acclimatisation in the Tropics 32

Memorial to the late Sir William Macewen 32

MODERN TECHNIQUE IN TREATMENT.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXVIII. — Treatment of the Commoner Affections of the Scalp. By A. M. H. GRAY, M.D., F.R.C.P. ... 33

SPECIAL ARTICLES.

Disinfection by the Municipality and by the Housewife in Scarlet Fever and Diphtheria: A Contrast. By DUNCAN FORBES, M.D., Ch.B., B.Sc., D.P.H. 34

The Choice of a Motor-car. By J. MARSHALL, M.I.A.E. —(*Illustrated*) 37

Epsom College: The Annual General Meeting 26

Tuberculosis: Vaccination against Tuberculosis.—An Indictment of X Ray Treatment of Surgical Tuberculosis..... 35

Berlin: Suicide Statistics.—Nervousness in Children.. 40

Paris: Gastroscopy.—Social Aid for Abnormal Children 41

PUBLIC HEALTH SERVICES.

Reports of Medical Officers of Health: Croydon.—Southport.—Swindon.—Taunton 42

Infectious Disease in England and Wales During the Week Ended June 21st, 1924 43

CORRESPONDENCE.

Vomiting as a Pathological Force (Mr. R. H. Paramore) 43

The Schick Test (Dr. R. A. O'Brien) 44

The Forbes Fraser Memorial Fund (Mrs. A. L. Hope).. 44

Spinal Analgesia (Mr. R. Foster Moore)..... 45

Osteopathy in its Medico-Legal Aspects: A Disclaimer (Mr. Arthur S. Morley) 45

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Royal Air Force..... 45

MEDICAL NEWS.

University of Glasgow 45

Royal College of Surgeons of England 45

Royal College of Surgeons in Ireland 45

University of London..... 45

Augustus and Alice Waller Memorial 45

Paris: Vacation Course in Diseases of Children 23

Tredegar Hospital, Monmouthshire 34

Westminster Hospital Reopening 34

Dr. Atkin Swan Memorial Fund 36

Hartley Hospital, Colne.... 43

Memorial to the late Sir Francis Farmer 43

Donations and Bequests ... 45

Society for the Prevention of Venereal Disease..... 46

Diplomas in Psychological Medicine 46

Durham University Medical Graduates' Association .. 46

British Association 46

Royal Sanitary Institute... 46

The late Dr. C. Burland.... 46

Maternal Mortality 46

Insulin: Reduced Prices .. 47

A Convenient Operation Table 51

Ophthalmic Benefit Committee 51

PARLIAMENTARY INTELLIGENCE.

House of Lords: Liquor (Popular Control) Bill .. 47

House of Commons: Tuberculous Naval Invalids.—Increase in the Population and Housing.—Poor-law Officers and Poor-law Reform.—Disinfection of East India Wool.—Public Enlightenment on Venereal Disease.—Women in the Ministry of Health.—Hospitals and Public Funds.—Pensioners and Final Appeals.—Appeal Court for Criminal Lunatics.—Royal Commission on Lunacy.—Government and the Summer Time Bill.—Cost of Public Health Services.—Surgeon-Commanders' Pensions.—Age Disqualification and Sickness Insurance..... 47

Medical Diary 50

Appointments.—Vacancies . 51

Births, Marriages, Deaths .. 51

THE INTESTINAL PROTOZOA OF MAN. By **CLIFFORD DOBELL**, M.A., F.R.S., and **F. W. O'CONNOR**, M.R.C.S., L.R.C.P., D.T.M. & H. Published for the Medical Research Council. With 8 Plates (3 Coloured). 15s. net; post free, 16s.

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Thomas Dixon Savill wrote his admirable work on "Clinical Medicine" as a kind of protest against the tendency in modern text-books to bury the essential clincial features of disease under a mass of pathological speculation. It is therefore appropriate that in choosing the subject of migraine I have been led to do so by a desire to show how little scientific foundation there is for the greater part of the biochemical miasma in which the condition has in recent years become enshrouded, and to emphasise a few basic clinical facts, the realisation of which makes it possible to give complete, or almost complete, relief to a large majority of sufferers from migraine.

So far as the clinical picture of typical migraine is concerned, the main features were well recognised several hundred years ago. Aretæus of Cappadocia, in the second century A.D., was the first to distinguish migraine from other forms of headache by drawing attention to its unilateral and paroxysmal character. Cælius Aurelianus (400 A.D.) described some of the visual symptoms and Alexander Trallianus (600 A.D.) the disturbances in gastric function, but it was not until 1725 that Vater drew attention to the characteristic hemianopia, and 50 years later that Mirabeau, whilst in prison at Vincennes, wrote the first of the long series of graphic descriptions of the visual phenomena, for which the medical profession is indebted to lay victims of migraine. Dr. Edward Liveing, later the distinguished librarian of the Royal College of Physicians of London, collected all that was known of migraine in a remarkable volume published in 1872, and in the 50 years which have elapsed since then very little of importance has been added to our knowledge of its symptoms.

PATHOGENESIS.

I believe that there are two essential factors in the pathogenesis of migraine—one central, the other peripheral. The first is a constitutional and usually inherited predisposition. It does not depend upon any obvious structural abnormality of the brain, but upon a functional abnormality, something of the same nature as the functional abnormalities of the brain which are the essential factors in the pathogenesis of epilepsy and of asthma. Indeed, there appears to be a definite relationship between the functional abnormality underlying these three conditions, as they not infrequently coexist in the same family, and occasionally even in the same individual.

THE MIGRAINE STORM-CENTRE.

No satisfactory theory has ever been advanced as to the nature of the constitutional element in migraine, any more than it has been in epilepsy or asthma. Fifty years ago Liveing in his book "On Megrim and Sick-Headache," which is now, as it was then, the standard work on the subject, suggested that an attack of migraine should be regarded as a kind of "nerve-storm." The term is a useful one, even if it conveys no precise scientific meaning. For I do not think it is possible in the present state of our knowledge to do more than express the belief that migraine, epilepsy, and asthma depend upon a constitutional tendency of certain parts of the brain to become storm-centres under certain conditions. They only differ in the part of the brain concerned. In asthma it is obviously the part of the vagal nucleus which controls the constrictor and secretory fibres of the bronchi that is at fault. In epilepsy it is cortical, or, if more deeply seated, it is an area from which impulses to the cortex are discharged during an attack. The phenomena of migraine concern so many parts of the body that the cerebral localisation of the storm-centre upon which it depends is very difficult to define. The typical visual phenomena are due to stimulation followed by paralysis of an area in the occipital cortex; the rare aphasia and disturbances in the sensory and motor functions of the limbs are also no doubt cortical; the gastric and vasomotor symptoms must depend upon disturbances in the sympathetic nervous system, whilst the origin of the headache remains a complete mystery. Perhaps the storm-centre is somewhere at the base of the brain, from which impulses pass successively to the different parts concerned. This would explain why the exact order of events varies in different individuals, but remains fairly constant in each patient, and why in the same individual attacks vary greatly in the relative prominence of the successive phenomena, all of which do not necessarily recur in every attack.

About 15 years ago I first defined asthma as a condition in which spasm, excessive secretion, and congestion occur in the bronchi as a result of paroxysmal discharges from an abnormally irritable centre in the medulla brought about by chemical, psychical, and peripheral stimuli, and I have seen no reason to modify this conception of the disease as a result of increased experience. The abnormally irritable centre is the only constant factor. The same is perhaps true in epilepsy, as attacks may certainly be brought about by chemical, reflex, and psychical stimuli, though in the majority of attacks it is impossible to recognise the nature of the exciting cause. In migraine a biochemical factor has frequently been suggested, though there is little agreement as to its nature. Nobody, so far as I know, has ever regarded migraine as a psychoneurosis, though expectation is an occasional factor in many individuals subject to migraine. Various peripheral causes have been regarded as playing a part in the pathogenesis of migraine, and my own experience points to an ocular origin as of fundamental importance in a large majority, if not in all, cases. These various factors must now be considered in greater detail.

I. BIOCHEMICAL FACTORS.

A perusal of the recent literature on migraine leaves the impression that most authorities hope to find a way of salvation in modern biochemical research. There is much talk about toxic idiopathies and how they may be discovered by cutaneous reactions, and in this connexion the close relationship of migraine to asthma is regarded as a hopeful sign. Migraine is also one of the many conditions which have been regarded during the last few years as due to disturbances in the glands of internal secretion. Intestinal toxæmia following stasis in the ileum or the colon has become a widely accepted explanation of migraine, and attempts have been made to cure the condition by such heroic measures as the division of adhesions, short-circuiting operations, and even colectomy. More recently the liver has been incriminated, especially by French physicians, and now that a distinguished surgeon recommends splenectomy for recurrent biliary infection, we may expect the spleen to be added to the already somewhat bewildering list of organs in which the migraine-producing poison may arise.

It is interesting to note that most of these theories are nothing more than revivals in modern dress of the ancient humoral conception of disease. Thirteen hundred years ago Alexander Trallianus ascribed migraine to a superfluity of bilious humour, for which he recommended "aloes and scammony and other drugs which purge off bile without heating much."

The tenth-century Arabian physician, Serapion, differed little from those who to-day look upon the intestine as the origin of most of the ills of humanity, as he too believed that migraine was due to the movement of pernicious vapours from the alimentary canal to the pericranium, whilst Graaf of Leyden in his treatise, "De Clysteribus," published in 1688, wrote that "clysters relieve headaches by ridding the intestines of excremental humours, the vapour of which can rise to the brain." About the same time that great Oxford physician, Thomas Willis, added the spleen to the liver, stomach, and intestines as a source of the peccant humour which causes migraine.

(*a*) *Anaphylaxis: Toxic Idiopathies.*

The theory that migraine is a kind of anaphylactic phenomenon similar to asthma and dependent on a toxic idiopathy—a hyper-sensitiveness to certain proteins—is certainly attractive and requires consideration. I do not know whether anybody claims to have obtained positive cutaneous reactions to proteins in as large a proportion of cases of migraine as Walker appears to obtain in asthma. I heard so much about his work when I was in America in 1919 that I brought back a set of his dried proteins in order to investigate the question myself. But although we have systematically tested the cutaneous reactions in every case of asthma both at Guy's Hospital and New Lodge Clinic with the dried American proteins, and more recently with one or other of the liquid preparations which have now been put on the market by several British firms, we have hardly ever gained any information of the slightest value. The largest wheals I have seen were in a man in whom it had already been discovered that the proteins of goose feathers and tea gave big reactions. But we found that the solvent of the proteins gave an equally great reaction, the patient's skin being apparently unusually sensitive to the slightest irritation. I believe most of the extravagant claims, which have been made by the very small number of observers in England who believe they have confirmed Walker's work, are due to a similar fallacy, for the physician who had examined this patient has written that he does not think it necessary to do controls with the solvent of his proteins as standards for comparison with his supposed positive reactions. Needless to say, no improvement in the patient's condition had followed giving up tea or the use of a kapok pillow. Other treatment at the Clinic resulted, however, in the complete disappearance of his asthma; a goose-feather pillow was then substituted without his knowledge for his own kapok pillow, and he had a perfect night with no trace of asthma.

True cutaneous reactions are very commonly obtained with pollens in hay fever, but I quite agree with Freeman, who was the first to use this method of investigation, that it does not give any reliable information in more than 5 per cent. of asthmatics, and in our experience positive results are never obtained in migraine.

In spite of the small value of cutaneous tests in asthma, I believe that a toxic idiopathy is none the less very often present in addition to the irritable bronchial centre, the inherited and constitutional abnormality which is the only essential factor. But I have not been able to obtain the slightest clinical evidence that a toxic idiopathy is ever an exciting cause of attacks of migraine.

(*b*) *Internal Secretions.*

It is not surprising that the endocrinologist—I apologise for the term, but it is not my invention—regards migraine as coming within his sphere of action. The author of the article on migraine in a large international system of medicine, published since the war, recommends treatment by the oral administration of pituitary gland, to which may be added suprarenal gland and in some cases extract of corpus luteum, testicles, and pancreas. Such multiglandular therapy has as much scientific basis for it as the electuary with which, in 1668, Riverius, physician to the King of France, cured "a choice virgin, Margaret de Varanda," of her migraine; it consisted of conserve of wormwood and maidenhair, elecampane roots, salt of tamarisk, magistry of tartar, and his "specifick aperitive powder."

Though most of what has been written on the connexion between the internally secreting glands and migraine is entirely speculative, there is no doubt that many women regularly have attacks immediately before or during the first day of each period, as was pointed out 150 years ago by John Fordyce, himself a sufferer, and the first English author to write a monograph on hemicrania. In such cases the attacks may completely cease during pregnancy, and permanent recovery may occur at the menopause. This must clearly be due to some endocrine activity connected with menstruation, which renders the storm-centre in the brain particularly sensitive at these times. But its exact nature is quite unknown.

(*c*) *Uric Acid.*

This short review of possible biochemical factors would indeed be incomplete if I did not refer to the uric acid theory of Alexander Haig. It is quite clear from the writings of John Fordyce, Sir Henry Holland, and Parry of Bath, who described exophthalmic goitre ten years before Graves and 15 years before Basedow, that gout and migraine, like gout and asthma, were often associated together, and this was still true in the gouty days of Trousseau. But, unfortunately, the disappearance of gout in England does not appear to have led to any diminution in the frequency of either migraine or asthma.

There was never any scientific basis for Haig's theory. I well remember seeing an outline drawing of a man, with the left half of his body chalked blue, which had been given to a relative of mine who suffered from left-sided hemicrania. He had been told that the capillary circulation of the part marked blue had been found to be sluggish and that this was due to excess of uric acid, which was also the cause of his migraine. It is curious to find in many of the most recent articles on the subject that a theory which has so little evidence in its support is still to some extent accepted, as a purin-free diet is often recommended, though an extensive trial has convinced me that no benefit resulted from this somewhat irksome treatment.

(*d*) *Gastro-intestinal Toxæmia.*

The majority of private cases of migraine I have seen since the war have been sent to me in the hope that I could find some metabolic disorder or some evidence of chronic toxæmia, the relief of which might cure their migraine. I must add that in at least one-half of the cases it had not previously been recognised that the condition from which the patient was suffering was migraine. Every case has been thoroughly investigated, but in no single instance have we found anything supporting the theory that migraine depends wholly or in part upon any form of gastro-intestinal toxæmia or metabolic disorder. Between the attacks gastric secretion is normal, the stools show no signs of deficient digestion or absorption, the urine is normal, and tests for estimating the functional capacity of the liver and kidneys show no deficiency. The stomach empties itself in the normal time, there is no ileal stasis, and there is no pathological delay in the passage through the colon. I have never found any justification for the view propounded by a recent writer in the *British Medical Journal* that migraine is due to recurrent attacks of dilatation of the stomach, as in no single case have we found any abnormality of the kind, and the author brings forward no evidence in support of his theory.

In some cases previous examinations with the X rays had led to a diagnosis of visceroptosis and

chronic intestinal stasis, and the patients were wearing uncomfortable abdominal supports and dosing themselves with aperients, and many had had courses of Plombières douching. But both diagnoses had been made without bearing in mind how great are the normal variations. A pelvic cæcum and a greater curvature and transverse colon below the belt are, like a movable kidney, no more signs of disease than a crooked nose. They are frequently found in the healthy and vigorous, and the kinks and secondary adhesions, to which they are sometimes said to give rise, are almost always figments of the imagination. Many of the severest cases of intestinal toxæmia I have seen were in people who were poisoning themselves with aperients and with the toxins produced and absorbed in excess from their colon as a result of its contents having been rendered too fluid. With a return to a healthy degree of constipation their symptoms generally vanished.

I have no doubt that the tendency to migraine may be greatly increased by the artificial diarrhœa produced in an attempt to overcome a hypothetical poisoning from intestinal stasis, which either does not exist at all or which can be completely relieved by very little more than proper attention to the normal hygiene of the bowels. But even this intestinal toxæmia is not the cause of migraine; it is simply an accessory factor, which aggravates the liability to attacks by its deleterious effect on the general health. Thus a lady, 47 years of age, consulted me four and a half years ago for severe attacks of unilateral headache, occurring at least once a fortnight. They lasted for about 12 hours and were always accompanied by hemianopia and followed by nausea and vomiting. She had had much treatment for supposed "colitis," which was regarded as the cause of the migraine, though the latter began when she was 11 and the intestinal symptoms were of comparatively recent onset. Correction of her errors of refraction resulted in the immediate complete disappearance of her migraine, which has not recurred, but four years later she again consulted me for the so-called "colitis," which was simply the result of injudicious purging. She has now been taught to allow her bowels to look after themselves, with the result that during the last five months she has been completely fit in every way.

II. PSYCHICAL FACTORS.

A psychical stimulus is an occasional but comparatively unimportant factor. Sir John Herschell, one of the numerous astronomers who have suffered from migraine, found that he could induce attacks by picturing in his mind the visual phenomena which usually accompanied them. I have known a patient get an attack on seeing a wallpaper with a zigzag pattern which reminded her of her migraine, and the remarkable periodicity in individuals, who get attacks every Sunday morning or the first day of every menstrual period, may be partly a result of expectation leading to the suggestion of an attack, as well as to the fatigue of the week or the effect of the disturbance in the internal secretions of the body which recur at monthly intervals in women. As in asthma and in epilepsy, expectation and suggestion can only cause an attack in an individual who has the essential irritable centre in his brain; without that no amount of suggestion could conceivably give rise to a true attack of asthma, epilepsy, or migraine. In the case of asthma and epilepsy nothing more than hysterical tachypnœa and hysterical convulsions respectively would result in the absence of the essential constitutional factor, but I know of no corresponding hysterical imitation of migraine.

III. REFLEX FACTORS: THE OCULAR ORIGIN OF MIGRAINE.

I come now to the consideration of peripheral stimuli as possible causes of an attack of migraine. In the case of asthma irritation of the nasal and bronchial mucous membrane and distension of the stomach and the rectum are common reflex causes of attacks. Peripheral irritation from various parts of the body is occasionally an exciting cause of epileptic attacks, especially in children. In migraine there is only one place from which a similar exciting stimulus arises, but it is of fundamental importance, as I believe that in its absence no attacks can occur, though the irritable centre in the brain is a permanent condition, which can even be inherited from an individual whose father or mother had migraine, but who never has an attack himself, because the exciting reflex cause never comes into operation.

In 1828 Piorry drew attention to the fact that cases of migraine occur most frequently in people who work in ill-lighted rooms, read and write much, and lead a sedentary life in which their attention is constantly fixed on objects badly lighted or of very small size. He concluded that the malady or, at least, the variety associated with visual phenomena was due to irritation of the optic nerves occasioned by eye-strain.

After a long period of neglect Piorry's views were revived from time to time, and in recent years particularly by Ernest Clarke in England and Gould in America. On the other hand, most modern writers on migraine ignore the ocular factor entirely or consider it of quite minor importance, and very few give it the prominence which I am now convinced it ought to assume.

Being interested both in neurology and in digestive disorders, I have had the opportunity of seeing a very considerable number of cases of migraine. For a short time in 1915, before I went abroad on military service, I had the good fortune of working in association with Lieut.-Colonel R. H. Elliot, and during the last five years he has investigated all my cases. I can honestly say that my views with regard to prognosis have entirely altered since I have had the advantage of his help. All my cases before the war had their eyes examined, and they all had the usual medicinal and general treatment. But though many improved, few were cured. Now the improvement is almost always considerable, and complete cure is common. I am indebted to him for the following brief details as to the nature of the ocular defects which he finds are commonly associated with migraine.

Hyperopic astigmatism, especially when associated with latent hyperopia, is the most common error of refraction. Astigmatism, which is generally compound, is very rarely entirely absent. Very small errors are quite sufficient to give rise to migraine, especially in highly-strung clever people with a very irritable migraine storm-centre. For this reason the most accurate possible correction of every error is required. A well-known neurologist has recently written that "errors of refraction should be adjusted only if they are important." But even the smallest errors are, I am certain, always important, and to correct only gross errors has prevented him, like many other physicians and ophthalmologists, from realising the enormous benefit which follows sufficiently accurate ophthalmological treatment. Muscle balance defect may by itself cause migraine, though much more frequently it is associated with errors in refraction. Hyperphoria, or insufficiency of the superior and inferior recti, is the most important, and esophoria, or insufficiency of the external recti, is sometimes a factor; but exophoria, or insufficiency of the internal recti, is of little or no importance. Muscle balance should be accurately tested in every case both for near and distant vision, as a quite different correction may be required for each. It is this cause of eye-strain which is most frequently missed in the ocular treatment of patients with migraine, though small errors of refraction, especially in the form of astigmatism, are also too often neglected.

Diagnosis.

A typical attack of migraine is unmistakable. A paroxysmal attack of unilateral headache, preceded by visual disturbances and followed by nausea and vomiting, could hardly be due to anything else. But

it must be remembered that the attacks vary greatly in different individuals, and even in the same individual. The visual phenomena are not often present in the remarkable forms, which have become classical as a result of the illustrated descriptions published by various distinguished sufferers. They may, indeed, be so slight that the patient does not mention them in describing his headaches and other symptoms, unless specially asked whether his sight is affected in his attacks. The headache, too, though generally the most prominent symptom, may be quite slight when the visual phenomena are most severe. Strictly speaking, a headache which is not unilateral ought not to be called by the English word megrim or the French migraine, which are simply mediæval corruptions of the Greek ἡμικρανία, or half-headache, but it is not uncommon for the other symptoms to be present in a quite characteristic form with a bilateral headache. It is true, however, that even when the whole head is affected, the pain is generally more severe on one side than the other, at any rate in some attacks. In rare cases neither nausea nor vomiting occurs; more commonly nausea and vomiting are such prominent symptoms that the patient makes light of everything else.

A great variety of other symptoms may occur with some or other of the three chief symptoms, or anomalous attacks may replace some of the typical migraine attacks. Thus disturbances in sensation and spasms or paresis may affect an arm or leg or one side of the face and tongue, and aphasia may accompany other symptoms involving the right side. In one case recurrent hemiplegia, with exaggerated deep reflexes and an extensor plantar reflex, was the prominent symptom, and a cerebral tumour had been diagnosed when I first saw the patient. But he had long been subject to migraine, and the hemiplegia was always associated with ocular symptoms and with a headache affecting the opposite side. The attacks ceased completely with treatment of the associated eye-strain. In some cases the patient may become confused or even have a definite attack of amnesia.

I have seen many cases in which the gastric symptoms were so pronounced that a diagnosis of some organic abdominal disorder had been made. As a matter of fact, such symptoms are quite unlike those caused by any primary gastric disorder, though the attacks of nausea without pain, which may occur in cholecystitis, are sometimes almost indistinguishable from the gastric symptoms of migraine, and they may also be accompanied by headache. In most cases a diagnosis can only be made by a careful inquiry into the associated symptoms and after a thorough investigation has failed to reveal any evidence of infection of the gall-bladder.

So-called bilious attacks in children are most frequently due either to migraine or to appendicitis. In this case again a detailed description of the attacks and a careful abdominal examination when an attack is actually present can alone point the way to a correct diagnosis. There does not appear to be any very sharp distinction between these "bilious attacks" and so-called "cyclical vomiting" of children. Out of 52 cases of cyclical vomiting observed in the Children's Department at Guy's Hospital, in which Dr. Osman was able to obtain a reliable family history, in no less than 23 the mother, or less frequently the father or some other relation, suffered from migraine, and 12 of these 23 had themselves been subject to cyclical vomiting as children. Cyclical vomiting appears therefore to be often, if not always, the expression in children of that type of cerebral storm-centre which gives rise to migraine in adults. The exciting factors in children are still unknown, but Osman has clearly shown that eye-strain, which is of fundamental importance in adults, has nothing to do with cyclical vomiting in children.

It is not generally recognised in England, though Mathieu and other French authors have frequently drawn attention to the subject, that diarrhœa may replace vomiting in some cases of migraine. It seems to be an exact equivalent, as the headache and nausea disappear as quickly after the bowels have been well opened as they generally do after vomiting, and in such cases an enema may abort an attack in the same way that washing out the stomach often does in the more usual form of migraine.

I am quite sure that numerous cases of migraine are missed owing to the ordinary text-book on medicine describing the classical attacks of migraine with the fortification spectrum and hemianopia, the unilateral headache, and the nausea and vomiting, without pointing out how unusual such attacks are, and without mentioning the far more common varieties together with the frequent *formes frustes*. Many of my patients had had an abdominal operation performed for the removal of an appendix, or, what was a far more serious mistake, part of the colon had been fixed, short-circuited, or removed for some hypothetical ptosis, kink, or adhesion, as such treatment not only did no good but actually produced abdominal symptoms which had not been present before.

I would suggest that in every case in which attacks of nausea occur, with or without vomiting or diarrhœa, but without definite abdominal pain, the possibility of migraine should be considered, and the patient should be questioned as to any associated headache, visual or other nervous symptoms. The possibility of migraine should also be considered in every case of paroxysmal headache, even if it is not strictly unilateral.

It is, of course, important to avoid making the opposite mistake. Just as typical epileptic attacks may be the first symptom of a cerebral tumour, so may symptoms very suggestive of migraine be due to the same cause, the tumour in this case being in the occipital lobe. Less commonly migraine attacks may be the first indication of the onset of uræmia, but an ordinary clinical examination should prevent the possibility of mistake in such a case.

PROGNOSIS.

Like the other paroxysmal neuroses, the only cure of migraine is not to have it, though, unfortunately, even this "cure" is not absolute. The storm-centre gets out of practice as time goes on, though it does not entirely forget how to act its old part. If an epileptic has no fit for three years, he can safely reduce his bromide, but I doubt whether it is wise for him to give it up entirely, even after an additional two or three years of freedom. I knew a man who had asthma from the age of 8 to 14. His family then removed from Southampton to South Africa. At the age of 39, after serving in the South African war, he came to England on a visit and landed at Southampton. He had had no asthma for 25 years, but had a severe attack on the night of his arrival. He fled to London, where he at once recovered, and he had had no further return when he left again for South Africa some months later—this time from another port, the atmosphere of which had not for him the asthmagenic properties of Southampton. With migraine the case is similar, and the spectacles which have caused the attacks to cease should be constantly worn. As the deficiency in muscle-balance may vary from time to time occasional re-examinations are useful, so that corresponding alterations in the prisms can be made when necessary. After some years of freedom from attacks, if the general health is good and vision for ordinary purposes satisfactory, the spectacles can perhaps be worn less constantly. But if the individual gets over-fatigued or goes through a period of physical or mental stress, a relapse is likely to occur unless the slightest tendency to eye-strain is continuously prevented. Thus I have known an attack of migraine occur after an interval of four years in a woman, whose very frequent and severe attacks had been completely arrested by proper glasses after prolonged drug treatment had failed. She had given up using them for over a year, when a period of unusual physical fatigue, accompanied by much worry, brought on the relapse. She at once returned to the discarded spectacles, and no further attacks occurred.

In most cases attacks of migraine become less severe and less frequent with advancing years, and spontaneous cure is not uncommon after the age of 50.

TREATMENT.

The most important part of treatment is the prevention of eye-strain. My object in choosing migraine as the subject of my lecture to-day will be attained if I can persuade practitioners, physicians, and oculists, whose past experience has led them to doubt the truth of this statement, to put it to the test once more. The author of the best recent clinical account of migraine I have read, in one of the most popular text-books of medicine of the day, writes that "very undue prominence has been given to the importance of errors of refraction as causes of migraine," and that "the majority of the subjects of migraine have no such errors of refraction, nor has the correction of such errors ever cured migraine." Personally I have never yet seen a case in which eye-strain was not present, and I have only seen two in which its correction did not either cure the patient or lead to very considerable improvement, and most of my patients had had prolonged treatment of various kinds before I saw them; some, indeed, had taken for months or even years the bromide, gelsemium, strychnine, and nitro-glycerine mixture first recommended by Gowers, which the distinguished neurologist, whose article I have just quoted, regards as his sheet-anchor in the treatment of migraine. The reason why the importance of the ocular factor is not more widely accepted is that few oculists trouble to give the attention to a patient with migraine that he requires. It is no doubt easy to correct an ordinary case of myopia, hypermetropia, or even astigmatism at a single interview of 15 or 30 minutes. But it is quite impossible to do this for a patient with migraine, as the smallest errors of refraction and every disturbance in muscle-balance require correction with absolute accuracy. This cannot be done in a hurry. At least three examinations on different days are required, the second being with the aid of a cycloplegic, and the third, 72 hours later, when the effect of the drug has completely disappeared. Muscle-balance defects are particularly difficult to correct, as their effect on the individual varies in degree from day to day, and even in the course of a single day. They are felt more in the evening when the patient is tired than when he is fresh in the morning, and at the end of a tiring week than after a restful Sunday. Their effect may temporarily disappear as the result of a country holiday, especially if the eyes are not used at all for any kind of near work. On the other hand, the resulting symptoms are exaggerated by anything, such as an attack of influenza, which impairs the general health.

Another difficulty is that many sufferers from migraine, far from having weak sight, as Piorry believed, are particularly proud of the excellence of their vision. They are very unwilling to consult an oculist at all, and still less willing to wear the spectacles he prescribes. In women often, and sometimes even in men, vanity stands in the way of cure, as a patient not infrequently hesitates whether the constant wearing of a disfiguring pair of spectacles is not too great a price to pay even for the relief of migraine.

The effect of preventing ocular strain is generally felt at once. In many cases attacks, which had occurred at frequent intervals for many years, cease immediately—never to return. In other cases they disappear less dramatically, but none the less surely; the intervals between them become more prolonged and they become less severe in character. Occasionally they actually become more intense and frequent for a short period, as with severe errors of refraction and disturbances in binocular muscle-balance it may take some time for the patient to become accustomed to the new conditions and for the strained extrinsic and intrinsic muscles of his eyes to relax. It is then often necessary to begin with a partial correction, and only gradually increase it until it is complete. Lastly, it must be remembered that the first attempt to overcome the eye-strain may be unsuccessful, generally owing to the patient's difficulty in answering questions correctly. In such cases he should be re-examined after having used his glasses continuously for three months, when it is usually possible to make quite accurate corrections. But if the symptoms persist and the first oculist consulted can do no more, then the help of another, and, if necessary, of yet another and another should be sought for until the desired object is attained. The first case which drew my attention to the fundamental importance of eye-strain was that of a young woman, who had had every kind of treatment and whose eyes had been examined and prescribed for on many occasions by four distinguished oculists without benefit, when she finally consulted a fifth, who was fortunate enough to discover and correct some deficiency in muscle-balance which had been missed by his predecessors. The cure was complete, as in the seven years which have since elapsed there has only been a single attack, and this resulted from giving up the spectacles at a time when the patient's general health was impaired.

Whilst the ocular factor is being dealt with it is often necessary to give some drug treatment, which will help meanwhile to reduce the frequency of attacks. Though arsenic has been used in countless cases since it was first recommended for the purpose by Bright, I have never convinced myself that it is of the slightest use. Bromide in small doses, as originally recommended by Liveing, and later by Charcot and by Gowers, appears to help some patients, but it has no effect in migraine in the least comparable to that which it has in epilepsy. The addition of gelsemium, nitro-glycerine, and strychnine in the mixture recommended by Gowers has not seemed to me to be any more effective than bromide given by itself. The only other really useful drug is luminal, which was, I think, first recommended for migraine by Wilfred Harris. A dose must be chosen which is just insufficient to produce any unpleasant degree of sleepiness, and this must be taken regularly. It can be given at the same time as the bromide, and the dose of both drugs can be increased for a few days when past experience indicates that an attack is imminent, as, for example, just before menstruation. The inconvenience caused by a slight amount of mental dullness and general sleepiness for a day or two is infinitely less than that caused by an attack in cases of any severity. But if the ocular defects have been adequately dealt with, it is not likely that drugs of any kind will have to be taken for longer than a few weeks, and in many cases it is unnecessary to take any at all. In a small minority of cases, however, complete relief only occurs if the prevention of eye-strain is associated with continuous medicinal treatment.

When other causes of ill-health, such as anæmia, dental or pharyngeal sepsis, gastric or intestinal dyspepsia, are found, they, of course, require suitable treatment. But though this may improve the general health, and thus make the patient get over the effects of an attack more quickly or even sometimes reduce their number, it is of quite secondary importance, and, as I have already pointed out, in a considerable majority of cases there is nothing of the kind which calls for treatment.

On the other hand, my experience shows quite definitely that attempts to treat supposed intestinal toxæmia by aperients, other digestive or metabolic disorders by freak diets, and endocrine deficiencies by glandular preparations—though happily most of the latter are completely inert—aggravate the patient's general health without influencing his migraine, and tend at the same time to add to the troubles of the unhappy subject of this paroxysmal neurosis by making him a hypochondriacal sufferer from a variety of imaginary complaints.

TREATMENT OF THE ATTACK.

I have little to say about the attack; it should be our object to prevent it rather than to treat it. But

we have recently obtained an interesting sidelight on the subject in the course of investigating the digestive functions of two of our cases. In each case arrangements had been made for the patient to be examined with the X rays on a certain morning, and she was given her opaque meal, although on waking she had found that a slight attack of migraine was beginning. The X rays revealed a complete absence of peristalsis in the stomach, and at the end of six hours of voluntary starvation none of the opaque meal had passed through the pylorus into the duodenum. It was clear that digestion was in complete abeyance. It is obvious that any drug taken by mouth under such conditions would not reach the small intestine, from which alone it could be absorbed. This explains the futility of giving drugs when an attack has once begun. It explains also why the patient is generally unwilling to take food of any kind until the attack is over, and why, if he has already had a meal, his one desire is to eject it from his stomach as soon as possible. It is less easy to understand why relief should follow vomiting when no food has been eaten during the day, as nothing is brought up but a little mucous fluid, followed, if the vomiting is severe, by the scanty, bile-stained contents of the duodenum. But relief undoubtedly occurs, and in my experience the only means by which an attack can often, though not always, be aborted, is to induce vomiting by swallowing large quantities of warm water containing sodium bicarbonate or, when this fails, by actually washing out the stomach. Perhaps forcing the stomach to contract sends impulses up the vagus, which modify the "storm-centre" in such a way that it ceases to discharge.

The wise practitioner and physician learn to draw sound conclusions from their own ophthalmoscopic observations in nervous and other diseases. But the examination of the eyes and their treatment in cases of migraine can only be undertaken by the specialist, and a specialist who is ready to devote much time to the study of the subject. The great advance in our knowledge of disorders of digestion during the last 20 years is largely due to a wise coöperation between the physician and the surgeon, the biochemist and the radiologist. Advance in our knowledge of the pathogenesis and treatment of migraine should come, I feel sure, through a similar close coöperation between the physician, the neurologist, and the ophthalmologist. The friends of the late Dr. Savill founded this lectureship in his memory as part of a scheme to promote and encourage research and education in neurology. I fear I have fulfilled my task inadequately, but if what I have said has the effect of stimulating the general practitioner, the physician, and the neurologist on the one hand, and the ophthalmic specialist on the other, and especially those whose experience in the direction I have indicated has not hitherto been encouraging, to investigate the subject without *arrière pensée*, I shall feel satisfied. For in its recurrent crippling influence on the work of men and women of the highest intelligence, during their years of greatest mental activity, migraine stands alone.

An Address

ON THE

THERAPEUTIC USES OF HIGH CARBOHYDRATE DIETS.

Delivered before the Leicester Medical Society

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THE subject of high carbohydrate diets is one well worthy of study for several reasons. In the first place, it is probably true to say that all existing treatises on dietetics contain masses of accumulated wisdom which are often devoid of any real scientific explanation. All of us can give examples of diets which are suitable or unsuitable in given conditions, but how seldom are we able to give a clear and logical explanation of such suitability or otherwise. From another point of view I feel this subject to be of interest, for we are becoming more and more aware of the weakness of the orthodox methods at our disposal for combating disease. Advances in our knowledge of pathology and of methods of diagnosis are so rapid that the house surgeon of to-day feels almost out of date when he compares what is taught to the junior clinical clerk with what he himself studied three or four years previously. It cannot be said that there is any similar rapid advance in the realm of therapeutics. If, then, we can envisage some new and broad therapeutic principle, we have made a considerable advance in our practical knowledge. I believe that high carbohydrate diets offer us a possibility in this respect.

PHYSIOLOGICAL SIGNIFICANCE OF CARBOHYDRATES IN DIET.

Let us begin by reviewing very briefly the physiological significance of the carbohydrate portion of our diet. The matter may be summarised in the shortest manner by saying that carbohydrates in the food are all reduced in the intestine to sugar, that they are absorbed in that form and subsequently serve as a source of energy, or, in other words, form the necessary fuel for the tissues.

But certain other considerations must be borne in mind which, if not fundamental, are of great practical importance to the physician.

(*a*) Carbohydrates are usually completely absorbed; even in diseases where diarrhœa is present it is unusual for any carbohydrate to escape complete digestion. And when some slight loss does occur it is rather on account of the cellulose envelope which shuts in the carbohydrate in certain vegetables, than on account of indigestibility of the carbohydrates themselves; when the carbohydrate food has been cooked, this cellulose envelope is almost invariably ruptured and the free starch then undergoes complete digestion. Very different is the state of affairs as regards the fats and the proteins; in diarrhœal diseases, in jaundice, or with faulty pancreatic secretion, the loss of one or both of these constituents may be very considerable.

(*b*) After absorption the carbohydrates require no great work on the part of the tissues in the process of their combustion and the elimination of their end-products. The absorbed sugar passes up the portal vein to the liver and thence to the general circulation, being burnt up according to the activity of the muscles and other tissues, or being stored first as glycogen and then perhaps as fat, if it be in excess of the energy needs of the moment. The end-products of combustion are singularly easy for the body to dispose of. The carbonic acid gas is readily eliminated by the lungs without effort or inconvenience of any kind; water, the only other end-product, is eliminated with equal ease by the kidney, and, be it noted, elimination of water by the skin can be readily performed if the renal function is below par. Proteins, on the other hand, after their absorption as amino-acids, must for the most part be substantially changed by the liver, the denitrification of these bodies calls for an appreciable amount of work by that organ, and the end-products so formed—urea, uric acid, and other nitrogenous substances—charge the blood with, at best, inert products, which require work from the kidneys before they can be eliminated. Nor are the fats less exacting. We know that they are after absorption less readily burnt up than the other foods. An actual provision of oxygen is called

for for this purpose, and, when this is deficient, aceto-acetic and hydroxybutyric acids, poisonous substances, may be produced with very definite ill-results.

It might be urged that by increasing the carbohydrate in the food, the digestion of sugar would be so increased as to flood the blood with glucose, producing a hyperglycæmia, as in diabetes, and a consequent glycosuria. In practice this does not occur. To produce such a hyperglycæmia, in any but a diabetic person, it is necessary to secure a very rapid absorption of sugar from the intestine, and actually, unless glucose itself be given by the mouth, it is almost impossible to do this. The digestion of starch is slow enough to secure a steady and prolonged absorption of glucose without great excess at any given moment.

From what has been said above it follows that, if to a normal diet you add further carbohydrate, you will tend to increase the patient's supply of energy, and you will thus tend to fatten him. At the same time, you are providing that form of energy which is most easily accessible, and the one which throws the least additional work on the internal organs of metabolism and excretion.

But here it must be noted that we may give a diet containing increased carbohydrate and at the same time reduce the content of protein, of fat, or of both. What effect will this produce? (*a*) According to the extent of the carbohydrate addition the energy value of the food will or will not be such as will tend to fatten the patient. (*b*) Work by the liver and kidneys will be appreciably diminished by reduction of the protein, and digestion in the alimentary canal will be more easily accomplished on the removal of fat. These facts, however, bring us in contact with certain less desirable consequences. Too great a diminution in the protein must bring us to a point where the nitrogen intake may be insufficient for maintenance. Even in the full-grown individual the constant wear and tear of the living tissues leads to a continuous and important loss of nitrogen, and the protein intake must never be reduced below what is necessary to replace this loss. The amount of protein requisite for this purpose is not very large, and as a practical reality it is hard to reduce the protein below this safety-level without making the diet so unpalatable that the patient will reject it. Again, it must be borne in mind that anything like total exclusion of fat from the diet will cause a very great fall in the caloric value; weight for weight, fat gives more than twice the supply of energy that carbohydrate or protein do, and to get a diet which is rich in energy without containing fat means necessarily that such a diet will be very bulky.

An even greater danger attendant upon a diet low in protein and fat lies in the fact that such a diet may prove to contain insufficient vitamins. It is well established that one of the most important of these accessory food substances is most commonly associated with the animal fats; reduction of fat means reduction of the total amount of fat-soluble vitamin. This aspect of our problem is seen to be still more important when it is realised that vitamin deficiency is more marked in the presence of carbohydrate excess than with a generally low diet. On the one hand, we know that absolute starvation rarely leads to signs of deficiency diseases; on the other hand, it has been frequently observed that it is the pigeon which eats large quantities of polished rice which develops avian polyneuritis more rapidly than his more abstemious companions do. Fortunately it is easy to prepare a diet high in carbohydrate and low in protein and fat which yet contains abundant vitamins; the addition of a little marmite and a sufficiency of raw fruit or salad will readily secure this.

One most important effect of such a diet has not yet been mentioned, its action upon the flora of the alimentary canal. The problem of intestinal bacteriology is so immense, its complexity is so prodigious, that few bacteriologists have made any serious attempt to classify the organisms normally found in this site. Certain specific organisms, such as the *Bacillus typhosus* and the dysentery bacilli, have been isolated and closely studied; but common bacteriological technique consists of planting specimens of fæces on media which will kill all but a few of these specific organisms, rather than of making any endeavour to identify all the varieties which may be present. In view of the difficulty of the investigation, it is hardly surprising that our ideas on infection of intestinal origin remain vague.

But it is possible, even without considering the organisms known to cause specific disease, to point to two great groups of organisms normally present whose characters are widely divergent: these are, firstly, the indol-producing group, which live upon the products of protein digestion, and the acidophilous group, which prefer a carbohydrate diet. The first of these groups is thought to play a part, if indeed its members be not the direct cause, in many generalised infections; the organisms are typical putrefactive organisms, and when they are present in abundance, ethereal sulphates and indican are present in the urine. What is more important in connexion with the present lecture is that this group becomes rapidly replaced by the acidophilous group of organisms as soon as the patient is put on a high carbohydrate diet. One caution must be made here; the acidophilous group form gas with many sugars, and this excess of carbon dioxide does in some cases cause a certain amount of intestinal distension. It is not noticeable in the majority of cases, and when it does prove a difficulty it can often be overcome by giving saccharose or certain other sugars instead of glucose.

DISEASES IN WHICH HIGH CARBOHYDRATE DIETS ARE USEFUL.

I hope that from these introductory remarks on the functions of carbohydrate certain practical applications may already be evident. It is high time that we made a practice of choosing diets in accordance with some such principles. At the same time it would be unwise to attempt to make any complete list of diseases in which high carbohydrate is advisable, and the following indications do not pretend to do more than record a few examples where such a diet has proved of advantage.

First, we may consider cases amongst infants. For many years the protein of the diet was considered the all-important feature, but more recently, especially following certain widely-published German books, there has been a tendency to ascribe malnutrition in artificially fed babies more to errors in the amounts of carbohydrate or fat than of protein. Recent work by British, French, and American authorities has somewhat shaken the supposed scientific foundation of the work of Czerny and Finkelstein, but there remains a fairly strong consensus of opinion which favours the addition of carbohydrate to the diet of one group of these wasting infants. This group includes those described by Czerny as having the "exudative diathesis," others disagree with his clinical classification, and in general it may be said that consultation of many authorities tends to lead to increased confusion. This much may be asserted, however, that if a wasting baby has hard constipated motions consisting largely of fat and calcium soaps, great benefit can usually be secured by reducing the fat in the patient's diet, and increasing the carbohydrate, by means of dextrimaltose or some similar preparation. The subject, which is admirably dealt with by Dr. Leonard Parsons in his Goulstonian Lectures,[1] is too vast for further discussion here.

In adults and older children the following classification includes many of the indications for high carbohydrate diets.

1. *Certain Specific Infections.*

(*a*) *Pneumococcal pneumonia* provides an excellent illustration of the utility of such diets in acute diseases. My attention was long since directed to the fact that, if at autopsy you examine the stomach of a man who

[1] See THE LANCET, April 5th, 19th, and May 10th, 1924.

has died of pneumonia, you will usually find, stagnating within it, all the food given him for several days prior to his death. The disease is too violent in its onslaught for normal digestion to be possible, and, if we remember that the period before the crisis rarely lasts ten days, it becomes clear that a highly digestible dietary, containing readily assimilable energy, is all that can be needed during this time. Glucose is the ideal substance for such a purpose, and I have found that repeated feeds of the strong glucose solution, which I shall describe later, is of great service in these cases. Beyond this all food given before the crisis need be no more than a placebo, and it is indeed of benefit to keep its amount very small.

(*b*) *In typhoid and paratyphoid infections* the utility of carbohydrates has long been recognised. Whether the administration of these with very limited protein has an actual effect in reducing the infecting organisms in the intestine is, to my mind, doubtful; the beneficial effects of starches and sugars are probably more due to their ready assimilability and the plentiful energy which they supply. In this group of diseases gas formation to which I have alluded must be watched for, as it may sometimes prove very uncomfortable.

(*c*) *In Bacillus coli communis infections* a high carbohydrate diet, with very reduced protein, often appears to be of the utmost service in checking an attack and preventing relapses. Sir Thomas Horder has laid emphasis on this line of treatment, and my own experience is in close agreement with his. These cases, especially those in which the urinary tract is involved, are frequently so resistant to treatment that any possible therapeutic aid is of value; my personal belief is that, if proper attention be given to the diet, in addition to the more usual therapeutic procedures, the course of these troublesome cases is materially shortened. Needless to say, in view of their chronic nature, the diet must be amply sufficient; starches rather than sugars should be chosen, and the protein reduction rigidly enforced, not only by excluding meat, but also by reducing articles such as milk and bread, which contain very appreciable quantities of protein, and by substituting more purely carbohydrate foods.

2. *In Certain Infections of Unknown Origin*, especially some cases of rheumatoid arthritis, great help is afforded by these methods of dieting. About 18 months ago we had the pleasure of welcoming to London Dr. Guelpa, of Paris, who introduced, many years since, a method of treating diabetes, somewhat akin to the modern fasting treatments. Guelpa's treatment consists of fasting and purgation, and, apart from cases of diabetes, I have sometimes seen this treatment produce the most happy results in cases of rheumatoid arthritis which had resisted all other forms of treatment. It is, I believe, worth treating such cases, where the origin of the infection is obscure, and other treatment has failed, by starvation and brisk purgation for several days, followed by a diet consisting chiefly of carbohydrate on the lines I have already indicated.

3. *Diseases of the Heart and Blood-vessels* provide fairly frequent examples of cases in whom this treatment is of use. In cardiac failure we have to avoid throwing extra work on the alimentary canal and the liver; moreover, a plentiful supply of sugar to the blood is often a potent factor in aiding the damaged cardiac muscle. Again, in arterio-sclerotic individuals it is a manifest advantage to supply them with the food that yields sugar, rather than the proteins which call for more metabolic work and a tedious excretion of nitrogenous substances.

4. *Respiratory Diseases* are seldom indications for this diet. Pneumonia has been mentioned. A few obscure cases of asthma have been traced to ingested proteins to which the subject is sensitive, and here carbohydrate replacement may be of use.

5. *The Alimentary System* gives us so many examples that a few only can be quoted. In cases of peptic ulcer, fluid and semi-fluid carbohydrate diets are now used extensively. I think the scientific basis s sound, and I am convinced that the practical utility is great. The main principle, as employed in the Sippy treatment, is to give small frequent feeds the carbohydrate nature of which is least likely to excite gastric secretion and which will never be long delayed in the stomach.

A still more numerous group of diseases of the alimentary tract is that in which undernutrition is the most outstanding feature. It would be out of place to describe these here in detail; I would but say that I refer to that class of patient whom one encounters so frequently, in whom, whether there be an organic lesion present or not, abdominal pain and discomfort have led to curtailment of the diet, loss of weight has aggravated the symptoms, and starvation and undernutrition have become the most prominent physical features. In such patients it is often essential to secure a diet which will not only sustain life, but will also help them to restore their lost subcutaneous and intra-abdominal fat, and usually a high carbohydrate diet is the method of choice for securing this. Such patients are often peculiarly intolerant to fat, and I feel this question is one which will repay much closer study in the future; for the moment I would impress upon you that, when fat cannot be tolerated, a high carbohydrate diet becomes essential if loss of weight is to be prevented.

A further group which must be considered w.th alimentary diseases is that embracing disorders of the liver. Fat digestion is here frequently imperfect; it is a matter of common knowledge that in practically all jaundiced states the paucity of bile-salts in the alimentary canal leads to a failure of absorption of fat. But note, in addition, that protein metabolism is also seriously affected, for the amino-acids, when absorbed, must in large measure be denitrified by the liver, and, therefore, a high protein diet is one calling for considerable hepatic activity. We must therefore conclude that neither fat nor protein can usefully be administered in any large quantity in such diseases.

But it may be urged that the glycogenetic function of the liver will also be impaired, and that therefore a high carbohydrate diet is equally inapplicable. I do not think this reasoning is correct; the storage of glycogen is but a temporary expedient, useful for securing a steady regulation of the blood-sugar, but not a cardinal necessity, and it is highly probable that if its capacity for storing glycogen is impaired the liver will merely allow the glucose which reaches it by the portal vein to transude into the systemic blood, thus giving a plentiful but somewhat irregular supply of sugar to the tissues.

I can say with emphasis that in acute cases of hepatic disease high carbohydrate, especially when given in the form of glucose, is often of remarkable value. A recent case of this type which I saw was one of delayed chloroform poisoning following prolonged anæsthesia; the administration of large quantities of glucose in solution by mouth produced a most dramatic recovery.

Much interesting experimental work dealing with the total extirpation of the liver in dogs has recently been performed by Mann in the United States; he found that, after recovery from the operation, the animals passed suddenly, after some hours of good health, into a condition of coma with muscular twitchings clinically comparable to the hypoglycæmic convulsions produced by an overdose of insulin; from this condition they were rapidly, though temporarily, restored by the intravenous injection of glucose.

I am convinced that this gives us the clue to the right line of treatment for cases of acute hepatic disease such as eclampsia, acute yellow atrophy, poisoning by chloroform, salvarsan, phosphorus, or other drugs. In these cases a plentiful supply of glucose must be attained, and this is usually easy if we give a strong solution by mouth. The current

practice of giving a dessertspoonful in a tumbler of water occasionally is of little use. My practice is to have a strong solution, made by dissolving over half a pound of glucose in a quart of boiling water, in which two lemons are steeped; when cooled this makes a very palatable drink, and I have found it easy to administer sometimes nearly a pound of glucose a day in this manner. The administration must be spaced out as much as possible, or else a good deal of the sugar will escape in the urine, but even here there is no danger unless the patient be a diabetic. In cases of chronic hepatic disease the indication is to give starches with very low protein, as in the diseases discussed in the next paragraph.

6. *The Renal System* supplies further indications for high carbohydrate diets. We are to-day inclining more and more to consider nephritis from the point of view of the biochemist rather than from that of the morbid anatomist. When faced with a case of chronic nephritis we inquire whether this patient is affected more by an inability to excrete salts or by a failure to eliminate the nitrogenous waste-products. The French have long made the useful distinction between the hydropigenous or dropsical patient, and the azotæmic or uræmic one.

Modern biochemical tests, such as the urea-concentration test, or the estimation of urea and non-protein nitrogen on the blood, aim at determining the capacity of the kidney for eliminating the nitrogenous waste products. When such tests inform us that the capacity of the kidney for performing this function is diminished, we are immediately faced with an indication for a diet in which the carbohydrate proportion is increased and the protein reduced. One cannot but be astonished at the frequency with which patients with acute nephritis are encouraged to imbibe large quantities of milk, a diet for which, to say the least of it, there is no scientific indication. I would say that in acute nephritis glucose is again the food for which there is a call, as it is the one which alone yields harmless end-products, and that in chronic cases, where there is diminished nitrogen excretion, starch rather than protein must be chosen.

There are many medical and surgical conditions to which I have made no allusion, but I hope that I have given some indication of the wide and useful field for the application of high carbohydrate diets; it remains to say a few words as to how such a diet may be chosen. I have already mentioned the strong glucose solution which I have found so useful in acute cases; it is also of value in more chronic ones if used sparingly and as an adjuvant to the diet. In these cases it should be given in such doses that the blood is never over-charged with sugar, and hence no glycosuria is produced; this is merely a question of spacing out the feeds properly.

Of foods, the most useful group is that which are known in France as pâtes: macaroni, vermicelli, nouilles, and various substances prepared from flour, arrowroot, sago, and other starchy substances. The list makes one reflect on the sad state into which the art of cooking has fallen in this country. In Italy or in any southern country the preparation of these foods is an everyday matter, yielding delicious results; here it is often impossible to obtain them in palatable form. Many of the starchy vegetables—potatoes, carrots, artichokes, &c.—are most useful, as are also the cereal foods, a great variety of which are now imported from the United States. A good book of diet tables is of much value to the practitioner in devising such a diet.

In chronic cases fresh fruit is often invaluable, not on account of its carbohydrate content, but because it enables us to supply that measure of palatability which is very essential for the well-being of our patients; it has the further advantage of giving sufficient cellulose to maintain the bulk of the fæces and so prevent constipation, and of ensuring a plentiful supply of vitamins.

SPLANCHNIC ANALGESIA.

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OPERATIONS on the upper abdomen are attended with a certain mortality, the causes of which may be numerous, but probably shock and chest complications are the greatest contributors to this mortality. It is obvious, therefore, that if some procedure can be used which will combat these two evils, a great improvement will have been made in abdominal surgery. The chest complications are due to prolonged inhalation anæsthesia, combined with which is the fact that the operative field lies immediately under the diaphragm, the movements of which must of necessity be impeded. The smaller movements of the diaphragm result in stagnation in the bases of the lungs, thus predisposing them to inflammatory complications induced by the irritant vapour. The shock is caused by repeated harmful stimuli passing to the central nervous system via the semilunar ganglia and splanchnic nerves, which supply the visceral peritoneum and intestinal tract.

Is there, then, some means of reducing the amount of anæsthetic administered, and at the same time cutting off the harmful impulses passing up the splanchnic nerves? The answer is found in splanchnic analgesia, with which this article deals.

Technique.

Splanchnic analgesia has been used for some time on the Continent and in America, and it was at Mr. G. Gordon-Taylor's suggestion that I investigated its possibilities, and through his kindness I have been able to use this method on patients from his wards at the Middlesex Hospital. The technique used is not original, but is that described in Gaston Labat's book on Regional Anæsthesia. The principle of splanchnic analgesia is that novocaine is deposited close to the semilunar ganglia and cœliac plexus so as to cut off the impulses passing from these nerves, thus enabling the viscera to be handled without causing pain or shock.

To give a brief description of the anatomy of the parts involved, the cœliac plexus consists of the cœliac or semilunar ganglia which lie on either side of the commencement of the abdominal aorta at the origin of the cœliac axis artery. The two ganglia lie on the crura of the diaphragm, that on the right lying behind the inferior vena cava. They lie internal to the suprarenal glands, and are at the level of the first lumbar vertebra. The two ganglia are connected together, in front of the aorta and around the origin of the cœliac axis artery, by a plexus of nerves which, with the ganglia, constitute the cœliac or solar plexus. Entering the upper part of the plexus are the great splanchnic nerves, which are derived from the thoracic sympathetic chain and primarily from the fifth to the ninth or tenth dorsal nerves, the nerves piercing the crura of the diaphragm to reach the plexus. From the plexus secondary plexuses pass to the abdominal viscera and visceral peritoneum.

It will be seen that the neighbourhood of the plexus to be injected is one which is not to be approached except with great care and delicacy, because of the proximity of the large vessels; therefore it is necessary for anyone taking up this procedure to familiarise himself with the anatomy of this region, and by repeated practice on the cadaver to make sure of the method and technique. The route adopted has been the posterior one, using a fine needle 12 cm. long. In those cases in which the operation is carried as far as possible without any general anæsthetic, preliminary injections of morphine and scopolamine are given, but if a light general anæsthetic is administered from the commencement then the usual injection of morphine and atropine is used instead.

The method of procedure is as follows: The patient is placed on the side opposite that to be injected, with a small pillow placed under the loin to prevent

sagging of the spine. The first lumbar spine is identified, and at a point opposite this and 7 cm. external to it a cuticular wheal is raised with a fine needle, using 1 per cent. novocaine—this point is usually found to be on the lower border of the last rib. Through this cuticular wheal the 12 cm. needle is now introduced and pushed on a little upwards, and at an angle of about 45° to the median plane, until its point is felt to come into contact with the side of the body of the first lumbar vertebra. When this bony contact has been made, the needle is withdrawn to the subcutaneous tissues and the angle altered so that the needle now advances more to the front of the vertebra and the bony contact again made. This procedure is repeated until the needle is felt to slide by the edge of the body of the vertebra, when it is pushed 1 cm. further, and, after aspiration to see that the needle is not in the lumen of the vessel, 30 c.cm. of 1 per cent. novocaine are slowly injected.

The needle is again withdrawn to the subcutaneous tissues and its direction changed downwards towards the second lumbar vertebra, and the process repeated until 15 c.cm. of 1 per cent. solution can be deposited in the corresponding position to that vertebra. The result is that 45 c.cm., of 1 per cent. novocaine are left diffusing amongst the loose areolar tissue on the antero-lateral aspects of the *first* and *second* lumbar vertebræ, and therefore bathing the splanchnic nerves and cœliac plexus. It was from trial that it was found that by directing the needle upwards as well as forwards and inwards, which is a slight modification of Labat's technique, the needle in most cases comes into very close contact with the great splanchnic nerve itself. The patient is now turned on to the side just injected and the same procedure repeated on the other side, so that altogether 90 c.cm. of 1 per cent. novocaine are used for blocking the cœliac plexus.

The patients do not seem to feel much pain on the introduction of the needle, provided it is done gently, but it is always possible to infiltrate the track of the needle with some novocaine if it is thought desirable. In those cases in which a light ether narcosis is maintained from the commencement there is no question of difficulty in introducing the needles. The blocking of the cœliac plexus does not, of course, affect the sensibility of the abdominal wall, and therefore it is necessary to perform an abdominal field block as well before the abdomen can be opened, or as an alternative, a paravertebral dorsal block can be done. The patient, after the completion of the splanchnic injection, is now turned on to the back and the abdomen uncovered.

If the patient is conscious, cuticular wheals are raised at the point of the xiphisternum, at the outer border of the rectus where it crosses the costal margin, and at points along the linea semilunaris to just below the umbilicus on both sides. Through each of these wheals a needle 5 cm. long is introduced in turn and pushed into the rectus sheath, where about 2 c.cm. of the 1 per cent. solution is deposited at each point where the sheath is entered. The exact method is that the needle is first entered at right angles to the skin into the rectus sheath, and then more obliquely upwards and downwards, so that one point of skin entry is used for several points of entry into the rectus sheath. By the time that the last injections have been made the recti will be found to be perfectly relaxed, and when that is so the operation can be commenced.

Record of Cases.

I have carried out this procedure in 18 cases, and in every case there has been ample proof that the cœliac plexus has been blocked. In five of the cases the operations have been commenced and continued for some time without any general anæsthetic, and in two of the cases the operations have been completed without giving any general anæsthetic at all. By the time that the first three cases had been operated upon without general anæsthetic, it had been decided that the amount of ether required to keep the patients just unconscious from the beginning could not be very harmful, whereas it relieved the surgeon of the anxiety inseparable from performing a major operation on a conscious patient. For this reason all the subsequent cases have been done under a first-stage ether narcosis from the commencement, unless there has been some definite contra-indication to a general anæsthetic.

The first case on whom this new method was used was a man, aged 43 years, suffering with a chronic gastric ulcer and under Mr. Gordon-Taylor's care, as were all the patients described in this article. This patient was rather a nervous man, but the injections were carried out without causing him any undue discomfort. Without general anæsthesia the abdomen was opened, and the operation of partial gastrectomy proceeded with as far as division of both omenta and freeing the duodenum from the pancreas. When the clamp was passed under the duodenum and tightened, the patient became restless and ether was then given in just sufficient quantity to keep him asleep, and in this way the operation was completed. The man's pulse was 112 when he left the table, and at no time had his respirations been accelerated, which is invariably the case when traction is made on the viscera of the upper abdomen, which was convincing proof that the splanchnic nerves had been blocked. One advantage that this first case showed was the quietness of the respiratory movements; they were so small as to cause not the slightest inconvenience to the operator, a great contrast to the exaggerated respirations of an ether anæsthesia, and this point has been noticed in all subsequent cases. This patient had a most strikingly easy convalescence despite the fact that he was distinctly debilitated by his disease; he showed no evidence of shock or post-operative pain. A point worthy of note is that this patient is the first gastrectomy case of Mr. Gordon-Taylor's who has not had morphine on the night of the operation. The next morning he was sitting up in bed very well indeed, and the remainder of his convalescence was uneventful.

The second case was a man, aged 48 years, who, when the abdomen was opened, was found to have an inoperable carcinoma of the duodenum, for which a posterior gastro-jejunostomy was performed. The operation was completed without any general anæsthetic, and the patient subsequently said that he knew that something was being done, but there was "total absence of pain." The patient's pulse normally varied between 84 and 100, and at the end of the operation was 96. He had an uneventful convalescence. One hour after his return to bed he was talking as though he had not undergone any operation.

Another case was a private patient of Mr. Gordon-Taylor, who was given light ether anæsthesia throughout, and on whom a partial gastrectomy was performed. This was a very difficult case, the patient having had a posterior gastro-enterostomy performed one year previously by another surgeon, and a great number of adhesions had to be dealt with, which prolonged the operation. The operation lasted 2 hours and 20 minutes, but at the end of the time the patient's pulse was only 84, and subsequently it was never more than 82 during a rapid and easy convalescence. The patient volunteered that he felt better after this operation than he did after his first one.

The next case was a hospital patient, a man, aged 48 years, with a carcinoma of the stomach for which a partial gastrectomy was performed. The operation was continued as far as division of both omenta and the duodenum, but when the junction was commenced between the stomach and jejunum the patient appeared to feel pain, and therefore a mixture of ether and chloroform was given to finish the operation, the amount used being only 3 drachms. It is worthy of note that this patient had a chronic bronchitis, but he had no trouble from this during his convalescence, which he undoubtedly must have had had the operation been performed wholly under an inhalation anæsthesia. The pulse-rate after operation was 72; the operation lasted one hour. Three hours after the operation this man was asking if he might smoke, and on the following morning said he felt quite well enough to leave the hospital.

Two cases have been done that were not gastric cases, one a splenectomy and the other an ovariotomy.

The splenectomy was performed on a man, aged 26 years, suffering with splenic anæmia, light ether anæsthesia being given throughout. The patient's pulse-rate was 80 at the commencement of the operation, and remained at this rate throughout the first 20 minutes of the operation; nor did his respiratory-rate vary, even when the spleen, which was very large, was drawn out of the abdomen. When the splenic pedicle was clamped the pulse-rate rose to 92, but respirations did not alter, and at the end of the operation the pulse returned to 80. The patient made an uneventful recovery.

The ovariotomy was performed for a malignant ovarian cyst, which extended above the umbilicus and was associated with ascites. The patient was very ill, having just recovered from broncho-pneumonia, and a general anæsthetic was contra-indicated. In this case the splanchnic analgesia

was induced in the usual way, but instead of performing an abdominal field block a paravertebral dorsal block was performed, blocking the ninth to twelfth dorsal nerves on both sides. Without any general anæsthesia the abdomen was opened from just above the umbilicus to the pubis, and a large malignant ovarian cyst removed, without the patient showing signs of feeling pain, except when the pelvis was swabbed out, which was to be expected. The swabbing of the pelvis having aroused the patient, she was given some ether, which amounted to ℥ iii. only, and the abdomen closed. The patient subsequently said that she had not felt any part of the operation except the preliminary injections.

Another case of gastrectomy being performed on a patient who had already a gastro-enterostomy is the following:—

A woman, aged 46 years, had had a gastro-jejunostomy performed five years previously, and for the last two years had had repeated attacks of pain and vomiting; she was very weak and a poor subject in every way. The usual routine was followed, ether being given throughout the operation. As usual with this type of case the operation was extremely difficult, and the adhesions around the gastro-jejunal ulcer which were present increased the difficulties. The operation lasted two hours; the patient's pulse-rate was 100 at the commencement, but it fell to 82 during the operation, and at the end it was 88. During convalescence the patient was so well that she might have had only a very minor operation; her pulse-rate never rose above 88 and fell to 72 on the third day.

Before concluding, I would like to quote one other case of interest as being one in whom I failed to be able to reach the front of the body of the first lumbar vertebra and yet managed to block the splanchnic nerves by blocking the dorsal nerves a short distance from their exit from the spine by a paravertebral dorsal block.

This patient was a young man, aged 32 years, who gave a very definite history of a chronic gastric ulcer. He was very ill, wasted, and anæmic, and subject to attacks of agonising pain in the back, due to involvement of the pancreas in the ulcer, with the result that he had had little sleep for weeks, and was both a physical and mental wreck. It was decided to operate on him with splanchnic analgesia, but owing to his very nervous condition it was decided to give him some ether from the commencement.

An attempt was made to block the cœliac ganglion in the usual way, but owing to a very narrow angle between the last rib and the spine, or to a long transverse process to the first lumbar vertebra it was impossible, after once striking the body of the vertebra, to alter the angle of the needle without striking either the last rib or the first lumbar transverse process. After repeated trials on both sides I decided to give it up and block the seventh to eleventh dorsal nerves close to their exit from the foramina, with the hope that the novocaine would diffuse forwards, and also block the splanchnic nerves and grey rami communicantes. That this occurred there is no doubt.

Mr. Gordon-Taylor performed a total gastrectomy on this patient, as the ulcer was so large that it extended very close to the cardiac orifice of the stomach, its floor being formed by the pancreas. The operation lasted two hours, and although the manipulations were carried right up to the œsophageal orifice of the diaphragm and most dense adhesions dealt with, the respirations of the patient did not alter, and very little ether was administered to him. His pulse-rate was 100 at the commencement and 132 at the end of the operation, and subsequently he made a good recovery, though the day following the operation he was in a very weak state. Both Mr. Gordon-Taylor and Mr. H. P. Crampton, who anæsthetised the patient, are quite certain that the patient could not possibly have undergone what he did unless the shock had been reduced so strikingly by blocking the splanchnic nerves.

The last case I will quote is that of a man, aged 35 years, with seven years' history of chronic gastric ulcer, and also a history of a healed pulmonary tuberculous lesion. It was considered advisable to avoid a general anæsthetic in this man's case, hence the preliminary injections of morphine and scopolamine were given, and splanchnic analgesia induced without a general anæsthesia. Instead of doing the usual field block on this case, I did a paravertebral dorsal block from D6–D10 on both sides.

The abdomen was opened painlessly, and an ulcer causing stenosis of the pylorus was found; a partial gastrectomy was decided upon. The operation was continued for 1 hour 30 minutes without any anæsthetic, and during this time the duodenum had been divided, after great difficulty in separating it from the pancreas. The distal end of the duodenum was closed and the stomach turned over to the left with further division of the lesser omentum. When an attempt was made to bring up a loop of jejunum the patient felt pain when the lower end of the abdominal incision was handled, due, no doubt, to the fact that only the tenth nerve had been blocked, whereas it would have been wiser to have included the eleventh as well. Ether was therefore given till the end of the operation, which lasted 20 minutes longer. At the commencement the pulse-rate was 80, which rate was maintained throughout until the end when it was as low as 60, which it was when the patient left the table. He made a good recovery.

I think that these cases quoted show conclusively the undoubted advantages of this method of reducing shock and the amount of anæsthetic administered.

Advantages and Disadvantages of the Method.

I now propose to review the advantages claimed for this method, which has definitely improved the outlook for patients who have to undergo operations of a large magnitude on the upper abdomen.

1. *The Shock* in all cases has been conspicuous by its absence, as shown by the general appearance of the patients and by the pulse-rates. The general condition of the patients has been extraordinary, for instead of being patients who seem to have lost interest in themselves and their surroundings, they are so well that they rather resent the administration of rectal salines and such nursing as they must have. This is the only drawback to the method according to the sister in charge of these cases. A point in support of the absence of shock is the fact that no blood transfusion has been necessary since this new method has been used, whereas previously it was quite a common occurrence with difficult cases.

2. *Chest Complications.*—In this series of cases not one patient has developed any chest complications, and this includes one patient with a very definite chronic bronchitis, and one with healed tubercle. There is no doubt that prolonged inhalation anæsthesia is responsible for many fatal chest complications in abdominal operations, and this method affords an excellent way of reducing the amount of drug inhaled. In connexion with the respiratory system, it is worthy of note that by means of this technique the exaggerated respiratory movements seen with deep surgical inhalation anæsthesia are entirely done away with. These movements must of themselves be very fatiguing to the patients, as anyone can prove by performing as deep and rapid respiratory movements oneself. It is impossible to continue for more than a few moments, and yet patients may keep this up for one and a half to two hours.

3. *Post-operative Vomiting.*—This rarely occurs, or is so reduced that it scarcely distresses the patient. This has a great advantage, apart from the patient's comfort, in that suture lines both within the abdomen and in the abdominal wall are not strained.

4. *Cases Not Admitting of General Anæsthesia.*—Patients with weak hearts or diseased lungs or any other condition contra-indicating a general anæsthetic can be operated on with very reduced risks, and, in fact, a patient otherwise considered inoperable might well be saved by the use of this new method. It is early yet to discuss fully the advantages and disadvantages of splanchnic analgesia; the advantages I have set out, the disadvantages appear to me to be few; the careful practice and knowledge of anatomy required can scarcely be called a disadvantage. The fact that it is not always possible to be certain of a complete anæsthesia demands the presence of an anæsthetist apart from the surgeon, unless this technique be practised by one who is an anæsthetist. The time taken to perform the injections varies, of course, with the skill and experience of the person performing them, but they take 20 minutes to half an hour in a difficult case. These two points seem to me to be the only disadvantages of the

method, but they are so small that I think they are quite outweighed by the distinct benefit the patients undoubtedly derive from this method of nerve blocking.

I have had a special syringe for regional anæsthesia made for me by Messrs. Arnold and Sons.

In conclusion, I wish to express my thanks to Mr. Gordon-Taylor for suggesting this investigation to me, and for allowing me to use this method on his patients, and also for his permission to publish the cases concerned. I have also to thank the hon. anæsthetists of the Middlesex Hospital for their keenness in coöperating with me in the use of a new method.

FLOCCULATION AND COMPLEMENT FIXATION IN SYPHILIS.

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IN order to test the relative merits of flocculation and complement fixation for the sero-diagnosis of syphilis every suitable specimen of serum or cerebro-spinal fluid sent to the pathological department of St. Bartholomew's Hospital for the Wassermann reaction (W.R.) during the past year has been examined by both methods. The sera included those obtained from the venereal department as well as those from the wards and out-patient department of the hospital. In carrying out the W.R. the technique described by Fildes [1] was followed. The results were recorded as (1) positive +++, complete inhibition of hæmolysis; (2) weak positive ++, slight hæmolysis; (3) very weak positive +, slight inhibition of hæmolysis. The flocculation test employed was the Sigma reaction (S.R.) detailed by Dreyer and Ward.[2] The heart extracts used in the S.R. were kindly supplied from Oxford with suspension factors determined. The number of specimens examined by both methods was 2092, comprising 2011 sera and 81 cerebro-spinal fluids.

Sera: Cases in which the Reactions Agreed.

The results obtained by the two methods were the same in 1755 specimens (87·3 per cent. coincidence)—namely, 1175 negative reactions and 580 positive reactions. The number of positive reactions includes partially positive W.R. results and S.R. readings which indicated 1·5 units per c.cm. of serum.

Sera: Cases in which the Reactions did Not Agree.

In 250 instances the reactions were not in agreement and reference to the clinical records of these cases led to their classification in three groups.

1. *Cases with Definite Evidence of Syphilis.*—Under this heading are grouped all cases which at an earlier date gave a positive reaction by both methods, cases which had definite clinical syphilis, including primary lesions in which *Spironema pallidum* was found, and cases of tabes dorsalis and G.P.I. A less definite class has also been included—namely, those patients who stated that they had been infected with syphilis many years ago. The majority of cases in this group had received some form of anti-syphilitic treatment. The results of the two reactions were as follows:—

W.R. positive and S.R. negative in	31 cases.
W.R. negative and S.R. positive in	176 ,,
	207

A considerable modification of these figures is brought about if the number of persons whose blood was examined is substituted for the actual number of specimens, as in some cases serum from the same patient was examined several times at intervals, varying from a few days to a year. The following figures refer to patients and not to the number of specimens examined.

[1] Fildes, P.: Medical Research Council, Special Report Series No. 78, p. 86.
[2] Dreyer, G., and Ward, H. K.: THE LANCET, 1921, i., 956; and Medical Research Council, Special Report Series No. 78, p. 72.

It will be seen that the results of the S.R. were in agreement with the clinical data in 86 per cent. of this group of cases.

One exam. of serum	73	W.R. pos. and S.R. neg.	15
More than one exam. of serum	52	W.R. neg. and S.R. pos.	108
	125	Results variable	2
			125

With two exceptions, the discrepancies between the two reactions were found each time a specimen of the patient's serum was examined. Seven cases gave a positive or partially positive W.R. and a negative S.R., but none of them consistently gave a fully positive W.R. In those cases which were examined on one occasion there was one in which the W.R. was fully positive and the S.R. negative. Forty-three cases on re-examination were consistently positive to the S.R. and negative to the W.R. The two exceptions were both well-treated cases and the results obtained were as follows:—

		Units per c.cm.
	Case 1.	
First exam. ..	W.R. negative ..	S.R. 1·7
Second ,, ..	,, very weak pos. + ..	,, 1·3
	Case 2.	
First ,, ..	W.R. negative ..	,, 1·5
Second ,, ..	,, weak pos. ++ ..	,, 1·3
Third ,, ..	,, negative ..	,, 1·5

In both cases the reactions were becoming negative after treatment, and the results are, therefore, in practical agreement as a border-line reaction is indicated by both methods.

2. *Cases where Evidence of Syphilitic Infection was Doubtful.*—Thirty-three specimens of serum derived from 24 patients are included in this group. The discrepancy between the W.R. and S.R. in one case was presumably due to an error in technique, as on re-examination the reactions were in agreement. Another case in which a quantitative W.R. was strongly positive was remarkable in the serum exhibiting an unusually high inhibition zone which, at first, caused the S.R. to be considered negative when it was really strongly positive. A specimen of this serum was sent to Dr. H. K. Ward, who reported as follows:—

"The following were the readings after 22 hours' incubation:—

Dilution of Serum.

1	1	1	1	1	1	1	1	1	1	1	1	1
1·25	2·5	5·2	13·1	26·4	53	106	265	530	1060	2120	5300	10600

Reading.

S+	tr+	tr	tr?	0	tr?	tr?	tr	tr+	T	T−	tr?	0

The flocculation in the fore zone was not typical in that there was no clearing commensurate with the degree of flocculation."

The number of Sigma units per c.cm. of this serum was 2865. The patient was suffering from nephritis and there was no evidence of syphilis other than the

(A) *Cases with Positive W.R. and Negative S.R.*

W.R.	S.R.	Diagnosis.	No. of specimens examined.
+++	0	Bilateral nerve-deafness.	3
+++	0	Glossitis.	1
+++	0	Retro-bulbar neuritis.	1
++	0	Diabetes.	2
++	0	Miscarriages.	3
++	0	Meningitis.	1
++	0	Arthritis.	1
+	0	Meningitis	1
+	0	Rheumatic fever.	2
+	0	Bazin's disease.	2

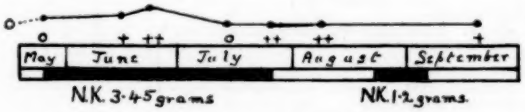
(B) *Cases with Negative W.R. and Positive S.R.*

0	9·0	Septicæmia.	3
0	1·9	Arthritis.	1
0	5·3	Defective vision.	1
0	1·5	Cerebral hæmorrhage.	2
0	2·6	Chronic dyspepsia.	1
0	1·5	Aortic regurgitation.	1
0	3·7	Meningitis.	2
0	1·9	Strabismus.	1
0	1·5	Diabetes.	1

serological reactions. The serum from three patients was found to give a positive W.R. and a negative S.R. Several specimens were obtained from each of these patients, and while the S.R. was consistently negative the W.R. varied from positive to very weak positive, and in each case a negative W.R. was obtained once. The clinical diagnoses in these three cases were respectively chronic laryngitis, congenital deformity of nose, and persistent headaches.

The remaining 19 cases in this group are tabulated below with their diagnoses.

CHART 1.



Early primary case. Uninterrupted treatment.

3. *Cases in which No Records were Obtainable.*—This group contains 16 sera, two of which were positive to the W.R. and negative to the S.R., and 14 were negative to the W.R. and positive to the S.R.

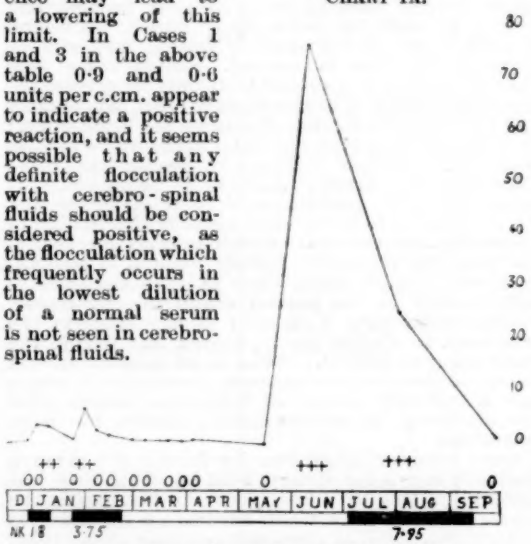
Cerebro-spinal Fluid.

The number of specimens of cerebro-spinal fluid examined was 81. In 77 instances the reactions were in agreement, 63 specimens being negative and 14 specimens positive. The remaining 4 specimens gave different results by the two methods.

Case.	Cerebro-spinal fluid.		Serum.		Diagnosis.
	W.R.	S.R.	W.R.	S.R.	
1	+ + +	0·9	0	0·0	Cerebro-spinal syphilis.
2	+ + +	0·0	+ + +	0·0	Retro-bulbar neuritis.
3	+	0·6	+ + +	33·6	Gummatous meningitis.
4	0	1·7	+ + +	65·6	Tabes dorsalis.

Dreyer and Ward[2] state that cerebro-spinal fluids which contain less than one Sigma unit per c.cm. are to be considered negative, but they consider that further experience may lead to a lowering of this limit. In Cases 1 and 3 in the above table 0·9 and 0·6 units per c.cm. appear to indicate a positive reaction, and it seems possible that any definite flocculation with cerebro-spinal fluids should be considered positive, as the flocculation which frequently occurs in the lowest dilution of a normal serum is not seen in cerebro-spinal fluids.

CHART 1A.



Early primary case. Interrupted treatment.

Flocculation and Complement Fixation in Early Primary Syphilis.

An attempt has been made to follow weekly the course of early primary cases which came under treatment before the serum reactions had become positive. The Sigma readings have been recorded in the form of curves and the W.R. results inserted at the bottom of the charts. Four curves have been selected which emphasise the well-known importance of adequate uninterrupted treatment with arsenobenzol preparations in the early stages of the disease.

CHART 1.—Early primary case. Uninterrupted treatment. Treatment was commenced seven days after the appearance of the chancre. Small doses of neokharsivan were given without serious interruption for a relatively long period. The Sigma readings never rose to 1·5 units per c.cm. of serum, but there was frequent partial fixation of complement.

CHART 1A.—Early primary case. Interrupted treatment. Treatment was commenced 12 days after the appearance of the chancre. The patient did not attend for a fortnight during the first course of neokharsivan, and this interruption was followed by a rise in the Sigma curve which gradually came down when treatment was resumed. Owing to the appearance of toxic symptoms an unusually long interval elapsed before the commencement of the second course. During this period regular injections of mercury failed to prevent a sharp rise in the Sigma curve.

CHART 2.

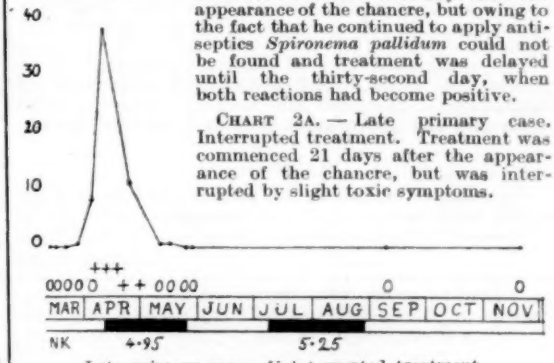


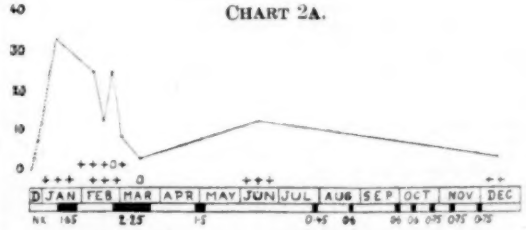
CHART 2.—Late primary case. Uninterrupted treatment. The patient came for treatment three days after the appearance of the chancre, but owing to the fact that he continued to apply antiseptics *Spironema pallidum* could not be found and treatment was delayed until the thirty-second day, when both reactions had become positive.

CHART 2A.—Late primary case. Interrupted treatment. Treatment was commenced 21 days after the appearance of the chancre, but was interrupted by slight toxic symptoms.

Late primary case. Uninterrupted treatment.

The four cases had similar mercurial treatment and the only known factor which could contribute to the bad results in 1A and 2A was the interruption of arsenobenzol treatment.

CHART 2A.



Late primary case. Interrupted treatment.

Conclusions.

There is evidence that the S.R. is more delicate than the W.R. in well-treated cases of syphilis and in imperfectly treated cases of long standing, but it appears that reliance solely on either method may lead to a very small proportion of positive sera being missed. In the case of cerebro-spinal fluids the S.R. appears to have little advantage over the W.R. owing to the fact that in the latter reaction a much larger quantity of cerebro-spinal fluid than of serum can be used, whereas in the S.R. the quantities are the same.

From the limited number of primary cases examined it appears that the S.R. usually becomes positive before the W.R., but occasionally a positive W.R. is obtained first.

DIAGNOSIS AND TREATMENT OF DIABETES MELLITUS IN HOSPITAL AND GENERAL PRACTICE.

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(*Concluded from p. 1314.*)

Food Values.

THE following list of food values (Table I.) has been compiled from the U.S. Government Reports (1906 and 1913), and the works of Joslin, Atwater and Bryant, Street, McKillop, and others. To facilitate dieting, the value of the foods when ready for use are alone given. In view of the fact that the various authorities often differ a little in their analyses, the figures for certain foodstuffs have been selected, within the range of variation, so as to permit of the formation of groups of equivalents. The values, which can never be more than approximate, are sufficiently accurate for practical purposes. The simplicity and usefulness of the table from the standpoint of doctor, nurse, and patient are obvious.

The immediate aim of dietetic treatment is to provide the patient with sufficient nourishment for health, and at the same time keep the urine free from sugar and any appreciable amount of acetone bodies.

TABLE I.

Grammes of carbohydrate, protein, and fat in 1 oz. of the following (ready for consumption):—

1 oz. of:	C.(g.)	P.(g.)	F.(g.)
"x" Beef: rump, loin, tongue, lean (cooked). Chicken (cooked). Herring (cooked). Liver (cooked). Kidney (cooked). Salmon (boiled)	—	6	3
"y" Mutton or lamb: leg or shoulder (boiled or roast). Veal (cooked). Turkey (cooked). Sausage (Bologna, Frankfort). Sardines (tinned). Salmon (tinned). Ham, lean (smoked or boiled)	—	5	5
"z" Beef: fat (cooked). Mutton or lamb, moderately fat (cooked). Ham, moderately fat (smoked or boiled). Pork: loin, ribs, or shoulder (cooked). Sausage, pork. Beef (corned)	—	4	9
Cheese: Cheddar, Cheshire, Roquefort, Swiss, Cream, Stilton	—	7	9
Bran biscuits (Callard and Co.)	—	—	—
Bacon, fat retained (fried)	—	4	16
1 egg (=2 oz.; half of the protein and all the fat are in the yolk) .. .. .. =	—	6	6
Fish, white (boiled)	—	5	—
Clear soup or bovril or beef-tea (6–10 oz.) ..	—	1	—
"Akoll" biscuits (Huntley and Palmer): each biscuit .. .. =	0·1	2	1
Butter or Margarine .. .. .. Lard .. .. Salad Oil	—	—	24
(p) Bread (brown or white)	13·2	2·4	—
(q) Rice (cooked, using a moderate amount of milk). Macaroni (ditto). Tapioca (ditto)	6·6	1·2	—
(r) Potato (boiled). Oatmeal porridge, moderately thin	4·4	0·8	—
(s) Sago (cooked, using little milk). Semolina (ditto). Farola (ditto)	3·3	0·6	—
Almonds, brazil nuts, walnuts	3	5	17
Milk (whole)	1·4	1	1
,, (skimmed)	1·4	1	0·1
Cream (thin), 1 teaspoonful .. .. =	—	—	0·5
,, (thick), ,, ... =	—	—	1·5

Note.—(p) = 2 (q) = 3(r) = 4(s).

Vegetables and Fruits. (Based on Joslin's Tables.)

—	1 oz. contains approx.: C.(g.)	P.(g.)	F.(g.)
GROUP I.			
Vegetables— Tomatoes, lettuce, watercress, endive, cabbage, celery, spinach, marrow, cauliflower, cucumber, sea-kale, Brussels sprouts, mushrooms, radishes, leeks, French beans, asparagus, broccoli, turnips, onions .. .. Fruits— Rhubarb, grape fruit	1	0·3	—
GROUP III.			
Vegetables— Green peas, carrots, beets, artichokes, water-melon .. .. Fruits— Oranges, fresh pineapple, peaches, apricots, strawberries, raspberries, cranberries, gooseberries. Apples and pears vary from 3–5 g. carboh.	3	0·3	—
GROUP V.			
Grapes, figs, plums, prunes, bananas (also canned pears, peaches, and pineapple) ..	5	0·3	—

Note.—1. Values given are for the fresh article; if cooked, a little over-weight is allowed. 2. If boiled a second time, and in a change of water, half to two-thirds of these values should be taken. 3. The groups are labelled according to the amount of carbohydrate.

The amount of acetone bodies is considered appreciable when even a slight ferric chloride reaction is obtained; to avoid fallacy, care must be taken that the patient is not taking drugs, particularly those of the phenol class.

Some cases clear up in a remarkably short time on, first of all, withdrawing most of the fat in the diet and subsequently reducing the carbohydrate and protein, especially the former, to a point at which the urine ceases to be abnormal. The more usual method is to begin by fasting the patient—only clear soup, beef-tea, bovril, and unsweetened tea or coffee (without milk), or lemonade being allowed. One or two days of this treatment often suffices. If, at the end of the second day, sugar is still present it is advisable to allow a little nourishment for one or two days—mainly protein and carbohydrate, the latter in the form of group 1 vegetables, e.g., a diet containing about 5–10 g. carbohydrate, 20–25 g. protein, and 5–10 g. fat with tea, coffee, &c., "ad lib." as before. A further one or two days of fasting may still be required, but this is unusual. Should sugar even then be present, it is advisable steadily to increase the diet over a period of five or six days until, say, roughly half the requisite number of calories are being given; at this stage it is better to order rather more protein than fat. Another attempt to render the urine sugar-free by fasting may now be made. If unsuccessful, the patient ought to be given the diet which seems to have the most suitable distribution of foodstuffs and contains enough calories for health. Although the glycosuria, usually reduced in amount, continues in such cases, there is often considerable improvement in the general condition. Of course, insulin might have been used at any stage in the treatment to abolish the glycosuria and restore the blood-sugar to normal. When at all possible, insulin should be given to these patients, also to those in whom any considerable degree of ketonuria persists after the maximum of carbohydrate tolerance has been established.

Cases rendered sugar-free by fasting are given a gradually increasing dietary, built up on the lines just indicated, with a fast on every seventh day, until in the course of two or three weeks adequate nourishment is being taken. Should glycosuria reappear at any time, it is corrected by fasting for a day or so, and the scale of diets then continued. If it be impossible to give the required number of calories without glycosuria recurring, then again one must decide whether the glycosuria should be allowed to continue or whether insulin should be employed.

Prescription of Diets.

This is still the great stumbling-block to many practitioners. They recognise that in no two instances will the course of dieting, if correctly applied, be the same; the amounts of carbohydrate, protein, and fat in the diet will vary according to the several defects of metabolism present. Furthermore, if insulin be given, the distribution of the carbohydrate, protein, and fat over the 24 hours must be correlated with the time or times of its administration and the dosage. The patient's likes and dislikes in the matter of food also demand attention. It is clearly impossible to solve the problem by constructing 24-hour diet-charts to meet every contingency. On the other hand, one may daily, or from time to time, prescribe the meals in detail, so as to conform to the changes in metabolism and the needs of the patient; this would be ideal for

TABLE II.—*A (Specimen) System of Diets.*

B_1: Tea or coffee ad lib. (without milk or sugar).	B_2: Tea or coffee + 1 teasp. thin cream. 1 oz. veg., Group I. ½ hard-boiled egg. 1–2 bran biscuits.	B_3: Tea +1 teasp. thin cream. 2 oz. veg., Group I. 2 oz. fish. 1–2 bran biscuits with a trace of butter (=1 g. F.).	B_4: Tea + 1 tablesp. milk. 4 oz. fish. 2 oz. salad, Group I. 2 "Akolls."	B_5: Tea + 2 tablesp. milk. 3 oz. fish. 1 egg and ½ oz. bread. 2 "Akolls" + a trace of butter.
0 0 0 =0	1 3·3 3·5 =48·7	2 10·6 1·5 =63·9	2·9 25·1 2·5 =134·5	8·2 27·2 10 =231·6
L_1: Beef-tea, bovril, or clear soup. (Black coffee or unsweetened lemonade.)	L_2: Clear soup or beef-tea. 1½ oz. white fish. 2 oz. boiled veg., Group I. 2 bran biscuits.	L_3: Clear soup or beef-tea. 3 oz. fish. 4 oz. boiled veg., Group I. 2 bran biscuits with a trace of butter.	L_4: Clear soup. 5 oz. fish. 4 oz. boiled veg., Group I. 3 "Akolls" + a trace of butter.	L_5: Soup or bovril. 5 oz., Group X. 5 oz. veg., Group I. 1 oz. potato. 3 "Akolls."
0 1 0 =4	2 9·1 0 =44·4	4 17·2 1 =93·8	4·3 33·2 4 =186	9·7 39·3 18 =358
T_1: Tea or coffee (without milk or sugar).	T_2: Tea +1 teasp. thin cream. 1 oz. veg., Group I. ½ hard-boiled egg. 1 bran biscuit.	T_3: Tea +1 teasp. thin cream. 2 oz. salad, Group I. 2 "Akoll" biscuits.	T_4: Tea +1 tablesp. milk. 2 oz. salad, Group I. 1 oz. chicken or Group X. 2 "Akolls" + trace of butter.	T_5: Tea +1 tablesp. milk. 3 oz. fish. 3 oz. salad, Group I. 2 "Akolls" + trace of butter.
0 0 0 =0	1 3·3 3·5 =48·7	2·2 4·6 2·5 =49·7	2·9 11·1 6·5 =114·5	3·9 20·4 3·5 =128·7
S_1: Beef-tea, bovril, or clear soup. (Black coffee.)	S_2: Tea or coffee + 1 teasp. thin cream. 1 oz. white fish. 2 oz. boiled veg., Group I. 2 bran biscuits.	S_3: Clear soup. 1 oz. salad, Group I. 1 oz. chicken or Group X. 2 "Akoll" biscuits.	S_4: Soup. 4 oz. fish. 3 oz. veg., Group I. ½ hard-boiled egg. 2 "Akolls" + trace of butter.	S_5: Clear soup. 3 oz. Group X. 5 oz. veg., Group I. 3 "Akolls."
0 1 0 =4	2 5·6 0·5 = 34·9	1·2 11·3 5 = 95	3·2 28·9 6 =182·4	5·3 26·5 12 =235·2
∴ D_1 =0 2 0 =8	D_2 =6 21·3 7·5 =176·7	D_3 =9·4 43·7 10 =302·4	D_4 =13·3 98·3 19 =617·4	D_5 =27·1 113·4 43·5 =953·5
B_6: Tea +1 tablesp. milk. 2 oz. oatmeal porridge. 1 tablesp. milk. 2 eggs + ½ oz. bacon. 2 "Akolls" + trace of butter.	B_7: Tea +1 tablesp. milk. 2 oz. oatmeal porridge. 1 tablesp milk. 2 eggs + 1 oz. bacon. 2 "Akolls" + trace of butter.	B_8: Tea +2 tablesp. milk. 2 eggs + 2 oz. bacon. ½ oz. bread + 2 "Akolls." ½ oz. butter.	B_9: Tea +2 tablesp. milk. 3 oz. mod. fat ham or Group Z. 1 egg. 1 oz. bread + ½ oz. butter.	B_{10}: Tea + 2 tablesp. milk. 2 eggs + 2 oz. bacon. 1½ oz. bread (or 4½ oz. mod. thin porridge). ½ oz. butter.
10·4 20·6 24 =340	10·2 22·6 32 =419·2	8·2 26·2 59 =668·6	14·6 21·4 46 =558	21·2 24·6 57 =696·2
L_6: Soup. 4 oz. Group X. 6 oz. veg., Group I. 1½ oz. potato. 2 "Akolls" + ½ oz. butter. +½ oz. cheese.	L_7: Soup. 5 oz. Group Y. 6 oz. Group I. 1½ oz. potato. 2 "Akolls" + ½ oz. butter. ½ oz. cheese.	L_8: Soup. 4 oz. Group Z. 6 oz. Group I. 1½ oz. potato. 3 "Akolls" + ½ oz. butter. 1½ oz. cheese.	L_9: Soup. 4 oz. Group Y. 6 oz. Group I. 2 oz. potato. 2 "Akolls" + ½ oz. butter. 1½ oz. cheese.	L_{10}: Soup. 5 oz. Group Y + 6 oz. Group I. 1½ oz. potato + 1½ oz. bread. 1½ oz. cheese + 1 oz. butter. (Black coffee.)
12·8 35·5 30·5 =467·7	12·8 36·5 37·5 =534·7	12·9 36·5 70·5 =832·1	15·0 38·9 53·5 =697·1	32·4 43·1 62·5 =864·5
T_6: Tea +1 tablesp. milk. 3 "Akolls" + trace of butter. 2 eggs. 1 oz. orange or fruit from Group III.	T_7: Tea + 1 tablesp. milk. ½ oz. bread + 3 "Akolls." ½ oz. butter. 2 eggs.	T_8: Tea + 2 tablesp. milk. 2 oz. fish + ½ oz. butter. ½ oz. bread + 3 "Akolls" + 1 oz. butter.	T_9: Tea + 2 tablesp. milk. 1 oz. bread, ½ oz. butter, 2 eggs (= 2 poached eggs on toast).	T_{10}: Tea + 2 tablesp. milk. 3 oz. fish + ½ oz. butter. 1 oz. bread + ½ oz. butter.
4 18·8 16·5 =239·7	7·6 19·7 27·5 =356·7	8·3 18·2 40 =466	14·6 15·4 25 =345	14·6 18·4 31 =411
S_6: Soup. 4 oz. fish. 1½ oz. potato. 4 oz. veg., Group I. 2 "Akolls" + ½ oz. butter. (Black coffee.)	S_7: Soup. 4 oz. Group Y. 1 oz. potato. 4 oz. Group I. 1 "Akoll" + ½ oz. cheese.	S_8: Soup. 3 oz. Group Y. 3 oz. Group I. ½ oz. bread. 3 "Akolls" + 1 oz. butter. 1½ oz. cheese.	S_9: Soup. 4 oz. fish + ½ oz. butter. 1 oz. bread + 2 "Akolls." 1 oz. cheese + ½ oz. butter.	S_{10}: Tea or coffee + 2 tablesp. milk. 3 oz. corned beef or Group Z. ½ oz. bread + ½ oz. butter. 1 oz. cheese.
10·8 27·4 14 =278·8	8·5 28·5 25·5 =377·5	9·9 32·6 55·5 =669·5	13·4 34·4 47 =614·2	11·3 21·8 49 =573·4
D_6 =38 102·3 85 =1326·2	D_7 =39·1 107·3 122·5 =1688·1	D_8 =39·3 113·5 225 =2636·2	D_9 =57·6 110·1 171·5 =2214·3	D_{10} =79·5 107·9 199·5 =2545·1

Note.—(*a*) The figures underneath each meal = g. C., P., and F., in this order, followed by the total number of calories in the meal. (*b*) B, L, T, S, and D are described in the text. (*c*) All food shown above is ready for consumption. (*d*) Bran biscuits may be obtained from Messrs. Callard and Co., Regent-street, London; "Akoll" biscuits from Messrs. Huntley and Palmer, Reading.

the patient, but calculations, &c., make it laborious for the doctor.

I have adopted a scheme of dieting which, used in conjunction with the foregoing table of "food values," has proved of great help in treating patients, both in and out of hospital. (Table II.) Menus of a number of so-called "basal" breakfasts (B_1, B_2, B_3, &c.), lunches (L_1, L_2, &c.), teas (T_1, &c.), and suppers (S_1, &c.) have been drawn up; these contain varying quantities of carbohydrate, protein, and fat. (See "System of Diets.") A dietary consisting of B_1, L_1, T_1, S_1 constitutes a 24-hour fast; for convenience the fasting diet may be referred to as D_1. Similarly, one may speak of D_2, D_3, D_4, &c.; the latter, however, are not intended to be regarded as whole-day diets, though *some* may be used as such. Of the basal breakfasts, lunches, &c., any number may be employed. Personally, I make use of 14 sets, but owing to lack of space only ten are shown. The latter will probably suffice, however, in most cases—at any rate, they serve to illustrate the principle of the method. Now the number of different 24-hour diets (consisting of B, L, T, S) that can be selected from these sets $= 10^4 = 10{,}000$. A certain proportion of these would never be used, but taking into account the varied distribution of the diet with insulin therapy as described later, and the fact that lunches and suppers are interchangeable, also in some instances the breakfast and teas, I should think that 50 per cent. of them are capable of finding an application at some time or other.

The following is an example of a prescription: B_6, L_2, T_4, S_7. In the formula B_6, L_2, T_4, L_6, the L_6 is being used as a supper. Additional amounts of carbohydrates, protein, and fat may be added to these *basal* meals without involving more than a momentary calculation. For out-patient work or in general practice it is convenient to have the various meals printed on separate slips of paper—the patient is simply handed the requisite B, L, T, S slips and a printed list of the groups of foodstuffs, while the formula, with its values, is recorded in the notes of the case (Table III.).

TABLE III.

—	C.	P.	F.	Calories.
B_6 .. =	10·4	20·6	24·0	= 340·0
L_2 .. =	12·9	36·5	70·5	= 832·1
T_4 .. =	2·9	11·1	6·5	= 114·5
S_7 .. =	8·5	28·5	25·5	= 377·5
Total =	34·7	96·7	126·5	= 1664·1

Insulin Treatment.

We now come to the class of case—Class A, previously described—in which insulin is of outstanding value. In such, insulin treatment should be commenced without delay, especially in A (1), A (3), and A (4). The insulin, given hypodermically, compensates for the deficiency of pancreatic hormone, and in this way the metabolism of carbohydrate and fat is, more or less, restored to normal. As already stated, the aim of treatment should be to rest the islet cells as much as possible by keeping the blood-sugar concentration at, or near, the fasting level, and simultaneously to provide nourishment sufficient for the needs of the body. Those cells which are not irreparably damaged, or those which are merely overworked by defect of the remainder, are thus given the best chance of recovery. As tolerance for carbohydrates returns the dose of insulin can be reduced. I have evidence to show that in certain acute cases, obtained at an early stage, tolerance may recover to such an extent that insulin can be dispensed with. On the other hand, the damage may be so complete and so extensive that, in order to maintain health, a certain minimum of insulin must be given, as far as we know, indefinitely. Its use in diabetic coma will be considered separately. *Insulin may be employed quite safely in general practice* provided that: (*a*) One proceeds carefully and gradually in the matter of dosage, especially after the disappearance of sugar from the urine; (*b*) the patient be taught thoroughly the symptoms of overdosage, and that he or she always have at hand the means of counteracting the condition.

It must be emphasised that an overdose may result in death. Generally speaking, diabetics are more sensitive to the action of insulin than normal people, and some diabetics are much more sensitive than others. It is for these reasons that care must be taken in administering the remedy.

Symptoms Produced by an Overdose of Insulin.—The sensitiveness of patients to insulin varies—some require only a small dose to produce a certain effect, while others require a relatively large one. The effects produced are associated with a lowering of the blood-sugar, and the extent to which this takes place before symptoms arise also varies. In the majority of persons, when the blood-sugar is lowered to the region of 0·05 per cent., the symptoms of what has been termed hypoglycæmia arise. In a few patients a decrease to 0·08 per cent. only may cause the condition, whereas in others, equally few, a percentage as low as 0·04, or even 0·03, may be necessary.

The most frequent symptoms are as follows: A feeling of uneasiness, fear, a sense of impending disaster, marked physical weakness, trembling, flushing of the face and sweating, sometimes followed by pallor—the latter especially in children, in whom also the pulse-rate is often increased. Diplopia, giddiness, numbness of the hands, face, and tongue, a feeling of constriction about the chest and throat, and hunger pain may also occur. In cases of greater severity there may be ataxic movements, incoherent speech, drowsiness, and, perhaps, a state of unconsciousness; even death may ensue. The unconscious state is alarming. As a rule it resembles deep sleep in which the breathing, pulse, and appearance are good and yet the patient cannot be roused. The milder symptoms generally herald its onset, but sometimes there is no warning.

Apropos of the concentration of blood-sugar at which hypoglycæmic symptoms appear, an interesting and rather singular experience which I had with one of my earlier cases on insulin treatment may be mentioned:—

A man, aged 60 years, moderately well nourished, had been dieted for a number of years, and during this time had remained practically free from symptoms, but always had a certain amount of sugar in the urine. When I first examined him the urine contained 5 per cent. of sugar and a small amount of diacetic acid; the blood-sugar during the morning fast was 0·303 per cent. He was given 15 units of insulin 20 minutes before a breakfast containing 7 g. C., 15 g. P., and 12 g. F. Just as the blood was about to be tested three hours after the meal he noticed for the first time that his voice had become rather thick, and a few minutes later experienced considerable difficulty in forming his words, felt chilly, unsteady on his legs, and decidedly nervous; the blood-sugar at this period showed in two simultaneous samples a percentage of 0·15. About 10 g. of glucose were given immediately by the mouth. In 15 minutes he was all right again, the blood-sugar then being 0·188 per cent.

The probable explanation of this phenomenon is that the patient's system had, in the course of years, gradually adjusted itself to the high concentration of sugar in the blood, working at this level, in much the same way as the normal does at the level of 0·1 per cent. It is therefore not altogether surprising that a sudden lowering of this concentration should have produced the symptoms described. Subsequently the blood-sugar was lowered by easy stages to normal figures, not only without recurrence of the ill-effects, but with benefit to the patient. Accordingly in chronic cases one should guard against too rapid a fall of the blood-sugar.

Treatment of Hypoglycæmia.—Nothing more than the mildest symptoms will ever occur if the simple rules for insulin therapy described later be followed.

These mild symptoms usually disappear rapidly after giving a hot drink, or a portion of the food belonging to the next meal. The patient should not be encouraged to have immediate recourse to sugar on such slight provocation. It is most important, however, that sugar be always at hand in case of emergency. If the above measures do not suffice, or if the symptoms be more marked from the start, then ½–2 oz. glucose or cane sugar must be given at once by the mouth. Recovery takes place within 10–15 minutes. Should unconsciousness have supervened, or the patient be unable to swallow, ¾–1 c.cm. of 1 in 1000 adrenalin, or ¾–1 c.cm. pituitrin, injected hypodermically, will practically always bring the patient round sufficiently within five minutes to take sugar by the mouth. If these remedies are not available, or if they do not prove effective, sugar must without delay be given intravenously. From 20 to 100 c.cm. of a 20 per cent. solution of glucose may be required. If the intravenous route fails the sugar should be injected into the subcutaneous tissues. Brandy and hot drinks are of value when consciousness has been restored. With ordinary care, however, mishaps of this nature do not occur.

Any patient who is having insulin and going about his work should as a precaution, always carry in his pocket about half-a-dozen lumps of sugar; this is really imperative if the dose be 20 units or over.

Correlation of the Diet and the Dose of Insulin.—Some physicians begin treatment by fasting the patient for a few days, or by fasting plus insulin before proceeding gradually to build up a suitable diet with the help of this remedy. The majority, however, employ the simpler method of putting the patient immediately on a diet calculated to supply his wants, and then endeavouring to restore normal metabolism by cautiously increasing the daily dose of insulin, which at first is a small one. Each method has its points. In the first one the blood-sugar is more rapidly controlled but a sufficient dietary is more slowly reached, in the second a full dietary is given from the beginning, but the decline of the hyperglycæmia is relatively slow. Further, as regards the latter, it cannot be considered the best practice in some cases, especially those in which debility is marked and the appetite poor, suddenly to throw upon the system the burden of a comparatively large meal that cannot be properly utilised. Personally, I favour an intermediate course, in which the patient is started on a diet containing roughly two-thirds of his calorie requirements and the dose of insulin gradually increased until satisfactory results are obtained. From this point a diet, sufficient for health, is steadily built up, care being taken meanwhile that the desired insulin effect is maintained by regulation of the dose. Circumstances and common sense, however, will decide in any particular instance whether at first a full diet or a fraction of it is the more applicable. As the procedure is essentially the same in both, the method of using the initial full diet will, for sake of simplicity, only be described.

The duration of the action of insulin depends partly on the size of the dose and partly on the severity of the disease. It may, for practical purposes, be put at four to eight, or roughly six, hours. The dose or doses should be so arranged that at least the bulk of the day's food is covered thereby; this applies particularly to the carbohydrate portion. In a case of any severity it is better to begin with two injections per diem; sometimes three may be necessary. As improvement takes place it may be possible to arrange the dietary so that most of it comes under the influence of a single dose without the return of symptoms. Continued progress may permit of further reduction of insulin, perhaps even its complete withdrawal occasionally. When two doses are to be given it is best to order two major and one or two minor meals in the 24 hours—e.g., a relatively large breakfast and lunch at, say, 9 A.M. and 2 P.M.; a moderately small tea at 5 o'clock, and a very light supper at 8 o'clock; bovril may be taken at 11.30 A.M. When patients are at work and away from home during the lunch-hour, it will probably be found more convenient to arrange the diet so that little is taken at midday, a meal equivalent to lunch being allowed at tea-time on the patient's return home. Insulin, in initial doses of 5 units, is given half an hour before the two larger meals; in severe cases bigger doses—e.g., 10 units—may be required. The patient should rest in bed at the beginning of treatment, or at least he should stay within doors. The 24-hour urine should be tested daily for sugar and diacetic acid. If all goes well the insulin may be increased, say, at the rate of 5 units daily, or only every second, third, or fourth day, first of all adding to the dose before lunch and then to the one before breakfast. The immediate object in view is to cause a gradual disappearance of sugar from the urine. Any single dose ought not to exceed 30 units. The effect of insulin in controlling hyperglycæmia is enhanced by reducing the carbohydrate intake and vice versa. When only one dose is indicated I find it is best to order a very light breakfast, a lunch containing almost half of the food for the 24 hours, a tea three and a half hours later, containing about one-third of the diet, and a light supper four hours afterwards; the injection is given before lunch. If insulin be discontinued, the three or four meals should be made nearly equal in food value and the interval longer than usual.

If glycosuria has been so reduced that only a small amount of sugar remains, it is valuable in the absence of blood-sugar estimations, and especially when large doses of insulin are being used, to test for sugar in the urine collected over the two hours preceding each injection. A sugar-free specimen should be an indication to proceed more carefully; it may even be advisable slightly to reduce the dosage if this be large. A 24-hour specimen free from sugar means that much has been accomplished for the patient, and the practitioner may be content to adjust the dose of insulin so that the condition just borders on glycosuria. If, however, he would secure the best results he must try to reduce the blood-sugar to a normal level. This may be effected safely by continuing the dose which had gradually freed the urine of sugar, strict watch being kept for the initial symptoms of hypoglycæmia. If none of these present themselves within four to five days, then the dose should be increased by a few units, say, every third or fourth day, until such symptoms just begin to appear. There is no danger in this procedure if the patient has been taught how to recognise and deal with the condition. The optimum dose is a little less than that which caused the symptoms. The latter may reappear as tolerance for carbohydrate improves; if so, more insulin is withdrawn.

It is, therefore, possible to treat diabetes quite satisfactorily without blood-sugar estimations, and by proceeding on these lines even the busiest practitioner can readily employ insulin with every prospect of success. The blood-tests, however, permit of a more rapid and more accurate adjustment of dosage, and consequently of an earlier and more effective rest for the pancreas. For this purpose estimations are best carried out before the first meal of the day, and three to hour hours after the injections.

The following is a brief example of the early part of the treatment advocated above:—

Patient, aged 30 years, weight 120 lb., under-nourished, urinary sugar 4 per cent., moderate degree of ketonuria, "fasting" blood-sugar in the morning 0·25 per cent., blood-sugar two hours after 20 g. glucose 0·35 per cent.

Calorie requirement (resting or at light work) = 120 × 13 = 1560 calories. A little in excess of this is ordered because the patient appears to be under-nourished. The diet as shown in Table IV. was therefore allowed.

Five units of insulin were given before breakfast and before lunch and the dose gradually increased, as described, until glycosuria was abolished and the sugar-content of the blood lowered to within normal

limits. This result was attained when 10 units were being given before breakfast and 15 before lunch. Later, by rearrangement of the diet, one was enabled to reduce the number of injections to once daily (Table V.).

TABLE IV.

—	C.	P.	F.	Calories.
B_7 .. =	10·2	22·6	32·0	= 419·2
L_2 .. =	12·9	36·5	70·5	= 832·1
T_7 .. =	7·6	19·7	27·5	= 356·7
S_3 .. =	2·0	5·6	0·5	= 34·9
Total =	32·7	84·4	130·5	= 1642·9

TABLE V.

—	C.	P.	F.	Calories.
B_3 .. .. .. =	2·0	10·6	1·5	= 63·9
L_2 +½ oz. bread .. =	19·5	37·7	70·5	= 863·3
T_3 .. .. .. =	8·3	18·2	40·0	= 466·0
S_3 +½ oz. butter .. =	1·2	11·3	17·0	= 203·0
Total .. .. =	31·0	77·8	129·0	=1596·2

Insulin, 20 units, given before lunch controls both lunch and tea; breakfast and supper throw but little stress on the pancreas. It is hardly necessary to illustrate the method further. In instances when the patient is only able to afford a fraction of the required dose, or when the supply is restricted, it is better to give this amount than none at all; metabolism is thereby brought nearer to the normal.

Treatment of Diabetic Coma with Insulin.

The presence of sugar and diacetic acid in the urine in a case of coma is sufficient indication for the immediate use of insulin. An initial dose of 25 to 35 units should be given, and repeated in one and a half to two hours if there is not appreciable improvement. When possible, blood-sugar estimations ought to be made at intervals in order to observe the effect of insulin. On the one hand, it may be that enough is not being given, on the other, it is possible that the dose may prove so great that the coma passes imperceptibly into the unconscious stage of marked hypoglycæmia. Blood examinations are clearly of great value in conditions of this sort. Should their aid not be available, the question of giving sugar in order to guard against hypoglycæmia has to be carefully considered. In most cases the action of insulin is dramatic, the patient making a rapid and remarkable recovery. Even after consciousness has been regained close observation is essential, and a supply of adrenalin and sugar ought to be always at hand in case of emergency.

Instruction of the Patient.

The patient's future depends greatly on his intelligence and on his faithfulness to treatment. To gain his coöperation, he should be instructed in points such as the following:—

(*a*) The nature of his disease.
(*b*) The principle that treatment depends on diet and not on drugs.
(*c*) The meaning of carbohydrate, protein, and fat, and how each of these foodstuffs affects the disease.
(*d*) How to measure out diets. [He ought to provide himself with scales weighing to 10 oz., and a 10-oz. fluid measure. After a little experience the amounts may be gauged accurately enough without their use.]
(*e*) The method of rendering the urine sugar-free.
(*f*) The care of the teeth and skin.
(*g*) The testing of a specimen of the 24 hours' urine for sugar. This should be done daily or every other day. The following is a very simple method: Half fill a tablespoon (if test-tube not available) with Benedict's solution and add 10 drops of urine. Boil for two minutes; if no reduction during this process, set aside to cool for 3–4 minutes: a clear solution then means absence of sugar.

It may be necessary to teach the patient how to inject himself with insulin. Patients having insulin should know the symptoms of hypoglycæmia and how to act when they appear. If the blood-sugar is being kept at a low level by large doses, sleep should not be allowed within six hours following an injection. If the supply of insulin fails, the diet should be reduced by half; subsequently it may be raised to two-thirds.

3. PROGNOSIS.

No definite prognosis should be given until the patient's response to treatment has been thoroughly tested. This, taken in conjunction with the history of the case and the general condition of the patient, is the best guide to the severity of the disease or the degree of permanent damage. The significance of factors such as age, habit of body, duration of the disease, state of nutrition, and the amount of weight lost is well known, and will be taken into account.

Insulin has so revolutionised the treatment of cases both mild and severe, early and chronic, that we must allow the lapse of time before making any comprehensive statement on prognosis. As far as my experience goes, very early cases, with a clearly-defined onset, do remarkably well on insulin treatment, rigorously applied from the commencement. For example, in September last I treated a man, aged 20 years, who gave a history of the sudden onset of marked thirst, polyuria, and general weakness, beginning a week previously. The weight was normal and no infection could be found. Three per cent. sugar and much diacetic acid were found in the urine. The fasting blood-sugar was 0·176 per cent.; three-quarters of an hour after a small carbohydrate meal the percentage was 0·297, and at the two-hour period 0·261. After four days' insulin (10 units b.d.) and dietetic treatment the blood-sugar was normal. No reduction in the dose was made until five days later. During the course of the following three weeks the remedy was gradually, and at last completely, withdrawn. Since then, examinations at weekly intervals have not detected any sign of relapse. The daily allowance of carbohydrate is, however, still restricted, being only 65 g. Whether the patient would have developed the disease in any severity without insulin, or whether dietetic measures alone would have sufficed cannot be decided. The degree of liability to a recurrence of the trouble is also unknown.

Looked at from the standpoint of restoration of tolerance alone insulin greatly enhances the prospects for the patient by ensuring that the pancreas has a better chance of recovery than with purely dietetic measures. As regards ultimate results it is too early to speak. So far, experience suggests that a patient may be kept going indefinitely on insulin. In only three out of a series of 31 cases of mine treated for periods ranging from three to seven months has the disease appeared to be progressive once the blood-sugar has been properly controlled; one of the three was afflicted by a marked chronic nasal catarrh, which fact may partly explain the disappointing result.

The question which arises with the majority of patients, however, is whether or not the remedy may be partially or totally withdrawn after a time without a relapse. It is only by prolonged observation of the response to treatment that an answer can be arrived at. For some the problem resolves itself, more or less, into one of constant supply, while for others there is the encouragement of good results already obtained and the hope that, at most, only a small or occasional dose of insulin may eventually be required to protect the functioning islet tissue against extension or renewal of the disease.

Summary.

Special attention has been directed to: (*a*) The feasibility of diagnosing and treating diabetes mellitus without blood-sugar estimations. The value of the latter has been indicated. (*b*) The simplification of dietetic treatment.

In conclusion, I wish to express my sincere thanks to Prof. F. Langmead for much valuable advice, and for his kindness in allowing me to make use of his cases.

Clinical and Laboratory Notes.

HEPATIC ABSCESS AS A COMPLICATION OF APPENDICITIS.

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THE case reported below is unusual in that after discharge of an appendicular abscess by the rectum for two years, hepatic abscess occurred, and in that although multiple infarction of the lung followed operation, a perfect recovery ultimately ensued.

H. B., male, aged 45, was first seen with Dr. T. Bowes, of Herne Bay, on June 26th, 1922.

History.—The history then obtained was as follows. Two years previously he had had an attack of acute intestinal obstruction, for which he was operated on, a mass of uncertain nature being found in the right iliac fossa. A lateral anastomosis of the terminal ileum to the ascending colon was performed. This partly relieved the obstruction, and shortly after an abscess burst into the rectum. Since that time, at varying intervals of from two weeks to two months, he had had attacks of pyrexia, abdominal pain, and pain on micturition, which lasted for a short time and were followed by the discharge of pus per rectum with relief, a state of affairs which had kept him more or less an invalid for two years. For the past two weeks he had been feeling very ill, with pyrexia and pain in the left epigastric region. This was quite different from the usual type of pain preceding the discharge of pus from the rectum. There was no history of dysentery and several examinations of the stools had proved negative.

Condition on Examination.—The patient looked ill and had marked clubbing of the fingers. There was dullness with greatly diminished breath sounds at the left base, rigidity of the upper part of the left rectus, dullness and a well-marked "cracked-pot" note over the front of the lower left ribs, and the liver felt slightly enlarged or pushed down. On rectal examination a large mass could be felt in Douglas's pouch. A provisional diagnosis of left subphrenic abscess was made.

Operation.—The next day, under an anæsthetic, the left base was needled in several places, but no pus or fluid was found. A high left paramedian incision was made and the subphrenic region was explored, but with negative result. The left lobe of the liver was seen to be congested and a needle was pushed in, pus being found at once. An incision into the liver opened an abscess cavity the size of a large egg-cup, filled with white odourless pus. This was drained with a large tube. The pus showed neither amœbæ nor actinomyces and remained sterile on culture. Bile discharged from the wound on the tenth day. Convalescence was very prolonged and was interrupted by repeated attacks of pulmonary infarction of the right lung, with spitting of first blood and later pus, and with high temperature and rigors. Gradually the condition improved, and the wound was fully healed in four months. Some cough and the usual abdominal attacks with discharge of pus from the rectum continued.

On Dec. 21st, 1922, he was again admitted with a view to clearing up the abdominal condition. X ray examination showed the ileo-colostomy to be working well, and X rays of the chest showed little except some darkening of the right side. On sigmoidoscopy marked œdema of the rectal mucosa, especially on the right side, was to be seen, but no actual sinus could be demonstrated. Dr. J. A. Ryle, who examined the patient, found signs of an old abscess cavity in the right lung. In spite of the negative results of the examinations of the stools, emetine gr. 1 was given daily for ten days but with no effect.

On Jan. 4th, 1923, the abdomen was opened through a right paramedian incision. The anastomosis was seen to be normal. A thick, rigid appendix, adherent to the right pelvic wall, was found and removed with little difficulty. Convalescence was rapid, and the patient soon regained his normal weight. There has been no return of any abdominal or chest symptoms, and the patient has been carrying on his duties for over a year in perfectly normal health.

Stillman, in a study of 1748 cases of appendicitis, found that complications occurred in 7 per cent., and of these only two were liver abscess; while in a series of 2714 cases of appendicitis collected from various London hospitals, suppurative pylephlebitis occurred in 0·4 per cent. In 1911 Quenu and Mathieu reported that in the literature to that date they could only find 14 cases of liver abscess treated, with 12 recoveries, and they note that three of these were probably subphrenic. They record seven other cases. Since that date Bittner, Brogden, Le Petit, Frank, and Kelly have each had a recovery from this condition, so that records exist of 23 cases, of which 20 are known to have recovered after operative treatment. Many other cases, of course, were only recognised to have a solitary liver abscess on post-mortem examination.

It is of interest to note that the left lobe was very frequently the seat of the abscess in contra-distinction to the far greater frequency of right lobe infection in other solitary abscesses. The surprisingly high recovery-rate in these cases is, no doubt, partly due to the fact that only the patients with a relatively mild infection develop a solitary abscess, but in this connexion the work of Lemaire is also of interest. His experiments show that to a certain extent the liver offers a protection against a general infection with the *Bacillus coli communis*, and indicate that this office is performed by the endothelial cells of the hepatic capsule, purification taking place in a few hours if the infection is not too severe. This fact probably accounts for the sterility of the pus found at operation in my case and in several of the others.

AN UNUSUAL CASE OF PRIMARY CARCINOMA OF LIVER.

BY E. W. JOHNSON, L.R.C.P., L.R.C.S. EDIN.,
SMITHDOWN-ROAD HOSPITAL, LIVERPOOL.

CARCINOMA of the liver is usually secondary, rarely primary. It is a disease of late adult life, more than half the cases occurring between the fortieth and sixtieth years (Leichtenstern). Osler says it occasionally occurs in children. Of the primary form three varieties are usually described[1]—namely, the nodular, in which there are scattered growths throughout the organ; the massive, in which the solitary tumour occupies a large area; and the so-called cancer with cirrhosis. The present case belongs to the second group. It seems to be sufficiently rare to merit recording.

R. A., male, aged 24, was admitted to hospital with the following history:—

Previous Illness.—Thirteen years ago—i.e., at the age of 11—he had been operated on for "tumour of the liver" at the Liverpool Northern Hospital. On admission there it was found that he had a tumour about 2 inches long, palpable below the right costal margin, apparently connected with the liver and non-fluctuating. An exploratory operation was performed and the tumour found projecting from the under surface of the liver. It was punctured with a hollow needle and only blood escaped. The tumour was presumed to be a sarcoma and the abdomen was closed.

History of Present Illness.—The patient stated he had been perfectly well from the time of the operation up to about two years ago, when he began to have breathlessness on exertion. He had been able to carry on his work as ship's steward up to a few weeks before admission.

Condition on Admission.—The patient was of very small stature and looked like a boy of 14. There was the old operation scar on the abdomen. He presented all the symptoms and signs of cardiac failure—orthopnœa, cyanosis, œdema, ascites, double murmurs at all the cardiac areas, apex beat diffuse and displaced downwards and outwards, œdema of bases, and albuminuria. The liver could be felt occupying most of the abdomen. There was no jaundice or wasting, nor any pain referable to the liver. He died in a few days.

Post-mortem.—In addition to great enlargement of the heart, there was a large tumour growing from the under surface of the liver, adherent to neighbouring structures and weighing several pounds. The report of the microscopical examination by Prof. J. M. Beattie stated that it was a primary carcinoma of the liver.

The interesting features of the case are: (*a*) The early age of occurrence of the growth; (*b*) its long duration—13 years; (*c*) it was practically symptomless; (*d*) the patient ultimately died of his cardiac lesion.

[1] Osler and McCrae's Medicine, 1921, p. 578.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF LARYNGOLOGY AND OTOLOGY: SUMMER CONGRESS.

A SUMMER Congress of these sections in association was held at 1, Wimpole-street, London, on June 26th, 27th, and 28th, under the chairmanship of the respective section presidents, Mr. H. J. BANKS-DAVIS and Mr. SYDNEY SCOTT. Among the foreign visitors were Prof. R. Magnus and Dr. De Kleijn (Utrecht) and Dr. Hartog (The Hague); a dinner was held on the 27th, and river excursions took place on Sunday the 29th, the latter on the invitation of Mr. Irwin Moore.

Miss E. LOWRY read a paper on

Throat and Ear Defects of the Elementary School Child.

She pleaded for a more sympathetic attitude on this matter on the part of the profession as a whole. There was still no provision for the treatment of tonsils and adenoids in the case of 89 educational authorities in this country, and at some centres there was no arrangement for treating diseased ears. In quite a number the light for examination was inadequate, and at some the practice was simply to syringe out the ear to ascertain if anything came away. The best clinics were those attached to hospitals or where the work was done by those holding hospital appointments.—Mr. J. S. FRASER advocated the cessation of all school procedure for a time to permit of hearing tests being carried out; the gross testing could easily be done by the teachers, the ears being separately tested, and the child's face turned away to prevent lip-reading.—Sir JAMES DUNDAS-GRANT did not think the tests should be too delicate, but there was need for much general attention to this question among the children.—Mr. DOUGLAS GUTHRIE referred to the difficulty often experienced in getting the family doctor to do anything when the defect had been pointed out to him. It would be very interesting to know what happened later to these cases, and therefore a system of following them up would yield useful information.

Various Communications.

Dr. A. BROWN KELLY read a paper on Tortuosity of the Internal Carotid in Relation to the Pharynx. He showed that it nearly always occurred in the lateral part of the posterior wall, and it might be either unilateral or bilateral. It might occur in young growing people, therefore was not always due to age, as had been supposed.

Dr. W. S. SYME spoke on Displacement of the Antro-nasal Wall in the Treatment of Atrophic Rhinitis, emphasising the need of doing all that was possible to obviate distressing ozæna. He described the operation and spoke of very satisfactory results, especially in regard to ozæna.

Mr. IRWIN MOORE gave a communication on Chondromata and Chondro-osteomata of the Larynx, based upon a study of 20 cases recorded and described in the literature, and indicated what he considered to be the best means to treat this condition.

Sir STCLAIR THOMSON read a paper on Ecchondrosis of the Larynx, recording two cases of the condition which he had treated by laryngo-fissure.

Mr. A. L. YATES submitted a description of the methods he had adopted for determining the activity of the ciliated epithelium in certain cases of sinusitis. He pointed out that when there was stasis of the fluid mucus in the nose it was due to paralysis of the epithelium, ciliæ being paralysed by the toxins of the organisms present.—Sir STCLAIR THOMSON characterised this as a most valuable piece of work, and referred to his own inquiry into the subject many years ago.

Prof. MAGNUS gave an address on the

Experimental Basis for Theories on Vestibular Function.

He said it was necessary to make a sharp distinction between the function of the canals and the function of the auditory apparatus, ascribing to the canals all reactions to rotations, and to the otolitic apparatus all reactions depending on certain positions and the sensations of rectilinear movements. He submitted the following schedule:—

Labyrinthine Reflexes.—1. Reflexes corresponding to movements: Rotatory reactions: (*a*) on head; (*b*) on eyes; (*c*) on limbs; (*d*) on trunk. 2. Reflexes resulting from positions: (*a*) on limbs; (*b*) on neck (and trunk). Labyrinthine righting reflexes: (*a*) Asymmetrical; (*b*) symmetrical. Compensatory eye positions: (*a*) Vertical; (*b*) rotatory.

Discussing the possibility of ascertaining which reflexes were of the canals and which of the otolithic apparatus, he said that if the guinea-pig were centrifugalised at high speed the otolithic membranes could be placed completely out of action, the canal remaining normally responsive. The experiments showed that the epithelium of the macula, without any action of or connexion with otolithic membranes, was able to produce in its own metabolism excitations, hence it must be assumed that the function of the otolithic membrane was to increase or decrease the amount of excitation produced in the metabolism of the cells. In the mucous mass of the otolithic membrane were embedded crystals of calcium carbonate, and the total weight of these crystals in a single otolith membrane was about one-fiftieth of a milligramme. Further careful experimentation showed that the utricles and the otoliths were connected with these reflexes, and that the maximal effect of the otolithic apparatus was not, as formerly supposed, produced by shifting, but by pressing or pulling on the epithelium. Concerning rotatory eye positions, it had not been possible to make out with certainty from which part of the labyrinth those reflexes arose, but experiments were still being continued in Utrecht to settle the point. For the vertical eye position, however, the results were very clear. With both labyrinths intact, in rabbit and guinea-pig, there was no vertical eye deviation; but if one labyrinth were restricted the well-known vertical eye deviation occurred, and this eye deviation was found to depend on changes of the head position in space. In the lateral position it was at zero, or certainly minimal. He proceeded to show that the findings were in accordance with the minute anatomy of the parts, and asked for evidence from practising otologists on the clinical side.

Dr. DE KLEIJN followed with a demonstration on the epidiascope of the compensatory eye positions in patients. He pointed out the importance of excluding the tonic reflexes of the eye muscles, which arose when the position of the head in relation to the trunk was changed; therefore the position of the head in relation to the trunk must remain fixed. Similarly, reflexes due to movements must be excluded.

Mr. A. R. TWEEDIE discussed the subject of vertigo in relation to otolith and neck reflexes.

Sir WILLIAM MILLIGAN read a paper on

Malignant Disease of the Naso-Pharynx,

which was illustrated by lantern slides. He spoke of the value of a preliminary irradiation of the growth, as it caused a marked shrinkage and lessened the risk of disconcerting hæmorrhage. He favoured the insertion of small glass tubes charged with radium emanations. Radium he had found of great value for growths in regard to which ordinary surgery was contra-indicated. He objected to the splitting of the palate, preferring to gain efficient access by doing lateral rhinotomy. Surgery offered less hope for these cases than did radium.—Mr. SYDNEY SCOTT deplored the fact that these cases were seen too late because physicians too often treated the symptoms instead of investigating the possible causes.

Dr. DAN MCKENZIE, in an exhaustive treatment of the subject of

Diathermy for Pharyngeal Cancer,

said no remedy hitherto available could equal diathermy in the treatment of cancer of the throat; no

other was applicable to both eradicable and ineradicable cancer. It had a cauterising and coagulating effect on the diseased tissues, and also an antiseptic effect by which tissues surrounding the growth were sterilised of bacteria. He described the procedure he followed in cases of varying degrees in both categories.

Anastomosis of Facial and Recurrent Laryngeal Nerves with other Nerves.

Sir CHARLES BALLANCE communicated a preliminary note on results he had obtained in some experiments in which the facial and recurrent laryngeal nerves were anastomosed with other nerves. The research was carried out in conjunction with Mr. L. Colledge, Dr. Lionel Bell, Sir David Ferrier, and Prof. S. G. Shattock, the last-named until he was attacked by illness; the inquiry is still in progress. After end-to-end anastomosis of the recurrent laryngeal and the vagus, there was found to be no movement on tranquil respiration, therefore the object was not attained. But at the end of 15 months, when the wound was reopened and the vagus was stimulated above the point of anastomosis, the vocal cord abducted. Still, at the end of 18 months there was no cord movement on tranquil respiration, nor on asphyxiation, showing, therefore, that a partial degeneration of function had taken place, and hence the anastomosis could not be regarded as a physiological one. A similar sequel was observed of end-to-end anastomosis of the descendens noni with the recurrent laryngeal. But the phrenic nerve seemed a likely one. Therefore, this was divided and a divided recurrent laryngeal was united to it end-to-end. It was necessary to arrange for the nerve-supply of the diaphragm, therefore the distal end of the recurrent laryngeal was united end-to-end with the cut descendens noni. To prevent atrophy of the depressor muscles of the larynx and hyoid bone, the distal end of the descendens noni was anastomosed end-to-side with the hypoglossal. These depressor muscles of the hyoid bone were now acting normally, and their electrical reactions were normal; also the diaphragm was reported to be working normally through the descendens noni. With regard to the anastomosis between recurrent laryngeal and phrenic, at the end of a few months both cords were found to be acting normally and harmoniously, and a little later the anastomosed phrenic nerve was acting a little too vigorously; hence the experiment had overdone what was aimed at, perhaps because the recurrent laryngeal energised a much bigger muscle now than under natural circumstances. A further experiment was to anastomose the recurrent laryngeal to half the phrenic, and in another the fourth root was employed. The result was that he was satisfied that the phrenic nerve would energise and produce rhythmical movement of a vocal cord corresponding to the movement of the other cord.

With regard to the facial nerve, in 1895 the first anastomosis was done for the relief of facial palsy; it was an end-to-end anastomosis of the facial with the spinal accessory. The result of this procedure was, practically always, recovery of the face after many months, but with an associated movement of the shoulder, so that when the shoulder was moved the whole side of the face twitched. The next nerve to be tried was the hypoglossal, but associated movements could not be entirely obviated. A happier result followed anastomosis between the glosso-pharyngeal and the facial. He considered, as a result of this work, that the glosso-pharyngeal was the nerve which could be used by surgeons for the recovery of motion in the face after the onset of paralysis there; also that a portion of the phrenic nerve could well be used in order to achieve recovery of movement in a paralysed condition of vocal cords.

The communication was discussed by Sir DAVID FERRIER, Sir FREDERICK MOTT, Dr. W. S. SYME, and Sir W. MILLIGAN.

A large number of clinical cases were shown and discussed.

Otological and Rhinological Problems in Scarlet Fever and Measles.

Mr. T. B. LAYTON initiated a discussion on this topic. One of the chief problems he mentioned was that presented by the child who, after convalescing from scarlet fever, still had a discharge from the ear. Was there a risk that such a child would infect others when he again went into the community? If so, one was faced with either having to keep the child in the fever hospital for a considerable time, or doing an operation on him. The question of the carrier in nose and ear disease was one which would have to be faced in the near future. With regard to mastoiditis in scarlet fever, most authorities considered there was no need for great anxiety concerning extension of disease from bone to the meninges. Much the same problems were presented in measles patients, but as fewer cases of this disease were taken into fever hospitals, there were fewer opportunities of studying them. Sinusitis he did not regard as very common during infectious diseases.

Dr. KERR LOVE said that as an aid to treatment, tonsils and adenoids should be removed as soon as it was safe to do so—i.e., after the fever had subsided. The school authorities should not readmit a child with a running ear after an attack of either scarlet fever or measles. He believed that suggestions would be adopted by the County of Dumbarton and the City of Glasgow authorities.—Sir WILLIAM MILLIGAN said the time to take concerted action on this most important matter to the rising generation was long overdue. These destructive processes in the ear were a great handicap. Adenoids should be removed during the disease—i.e., as soon as the temperature came down; the removal should not be deferred until the patient was convalescent.—Mr. J. ADAM said that of 62 cases who developed otitis media only five required mastoid operation, which seemed to show that the tendency was for otitis media to get well if no operation was done.—Dr. MCKENZIE thought the mastoid should be operated upon more frequently in these cases of discharging ears. The question of secondary paracentesis should never arise.—Mr. NEIL MACLAY said that out of the large number of cases of scarlet fever admitted to the Newcastle Fever Hospital he had never seen the large devastating perforations which were described in the text-books. It was very difficult to anticipate the discharge by paracentesis, but efforts were made to cleanse mouth, fauces, and ears. Tonsils and adenoids, if prominent, were removed at an early period. Mr. J. S. FRASER agreed with Dr. McKenzie as to secondary paracentesis; he had never seen a secondary paracentesis do any good. He believed that if the rhinitis resulting from scarlet fever and measles were cured, much ozæna would be obviated in the future.—The discussion was continued by Mr. HUGH JONES, Dr. SYDENHAM, Mr. BANKS-DAVIS, Mr. GILLESPIE, Dr. F. W. HARTOG, Dr. A. D. SHARP, and Mr. J. F. O'MALLEY, and Mr. LAYTON replied.

Dr. P. WATSON-WILLIAMS read a paper on the Clinical Importance of Nasal Sinus Infection in Mastoiditis.

Dr. ALBERT A. GRAY gave a demonstration of stereoscopic slides for teaching purposes. Coloured representations of minute anatomy could be seen in three dimensions by means of simple two-colour (red and green) spectacle frames worn by the observers.

SECTION OF UROLOGY.

POLYCYSTIC DISEASE OF THE KIDNEY.

A MEETING of this section was held on June 26th, Dr. LANGDON BROWN, the President, being in the chair, when Dr. PARKES WEBER read a paper on the

So-called Myelin Kidney.

He explained that his interest was originally aroused in this subject by the numerous examples of opaque specks and streaks seen in the routine work of the post-mortem room. Some of these streaks were shown to be minute adenomata, others small cysts

with intracystic papillary growths; one was a minute true lipoma, and there were many other types. Small deposits of calcium salts and fats were not uncommon, and there occurred not infrequently the deposition of the cholesterin ester named myelin by Virchow. In these cases there were collections of large clear cells in the interstitial part of the kidney cortex. In paraffin sections these cells have a small pyknotic nucleus and faint outlines of a supporting framework can be seen, for which reason they have been termed "foamy" cells. When cut fresh and stained with Sudan III., these cells are stained a brownish pink colour, due to the presence of an anisotropic lipoid as shown by crossed Nicol prisms. In his opinion these cells were similar to those seen in the cutaneous xanthomata. The so-called myelin kidneys occurred in those patients who had a mixed parenchymatous and interstitial nephritis. Either there had been a primary parenchymatous condition followed by a chronic interstitial nephritis, or a glomerular nephritis had been succeeded by the other changes. They were also occasionally found in connexion with chronic endocarditis. The possible prognostic significance of myelin casts in the urine had been emphasised by Dr. McNee following Monck's work in 1913. In this connexion it was to be remembered that cholesteræmia might be present. He pointed out that experimentally myelin kidneys had been produced by feeding rabbits on cholesterin.

Dr. J. W. MCNEE said that all degrees of this condition existed, from the slight speckling to the gross deposits in the cortex. The term was used to denote a special form of degeneration, which he had found to occur not only in nephritis but in the early stages of arterio-sclerosis, and in some surgical conditions—e.g., chronic mastitis. He believed that the change starts in the tubules, and that some of the fat is excreted as lipoid casts in the urine, and the rest goes via the lymphatics to the interstitial part of the kidney cortex. He believed that this peculiar type of degeneration represented a stage from which there was no recovery, whereas cells undergoing ordinary fatty degeneration were quite capable of regeneration. He therefore regarded myelin casts in the urine of definite prognostic importance, in that the case was one in which a progressive lesion was present, and the outlook was grave.

Dr. S. C. DYKE showed photographs of myelin kidneys through crossed Nicols; in his cases the myelin change was in the cells of the tubules. In all his cases there had been œdema and albuminuria, high cholesterol ester content in the blood, and a low urea concentration. In his opinion there was a close association between œdema and the myelin kidney.

Discussion on Polycystic Kidneys.

Sir THOMAS HORDER in opening this discussion based his remarks upon three personal cases.

CASE 1.—A man aged 43, when first seen had vomiting and diarrhœa, having had a similar attack over a year before. There was giddiness, with headaches, pains in the back, thirst, and polyuria. Some tingling sensations in the hands and legs were present, and just before being seen he had had a transient swelling of the face and legs each morning. Abdominal examination revealed two large renal swellings. For the first three days there was some pyrexia, the urine was diminished in quantity with some albuminuria. The urine output soon returned to within normal limits, the albumin disappeared, but the blood-urea remained high. Urea concentration in the urine was on four occasions 1 per cent., 1·1 per cent., 1·1 per cent., and 1·15 per cent. Diagnosis was bilateral polycystic kidney, and the man is alive to-day, some two years after.

CASE 2.—A woman aged 34, came for advice because of a large abdominal tumour two months after her second normal pregnancy. The gynæcologist who saw her believed the tumour to be coming from the pelvis, and thought it an ovarian cyst. Laparotomy revealed a left polycystic kidney, which was removed. The right kidney was slightly enlarged to the examining hand, and the pelvic organs normal. Afterwards she developed an acute coli infection of the urine, which subsided afterwards. Patient alive and well two and a half years later.

CASE 3.—A man aged 53, had had persistent vomiting for two years, and was first seen with anorexia, headaches, and urinous smelling breath. The urine was of low specific gravity, was not diminished in amount, and had a low urea concentration. The vomitus contained urea. His retinæ were unchanged, and the abdominal examination revealed bilateral renal swellings of typical character. Vomiting continued and patient died shortly after admission from uræmia with convulsions.

Sir Thomas Horder considered that these cases did nothing more than confirm the generally accepted views on the behaviour of the polycystic kidney. Patients usually came for advice when between 30 and 50, either for chronic renal disease, whether uræmic or cardio-vascular, or because of abdominal swellings. Their course was slow and subject to intercurrent renal nephritis. Unilateral cases would often live for a long time, and his difficulty was to define whether, in those cases of an unilateral swelling, the opposite kidney was unaffected or already cystic, for it was well recognised that one kidney might enlarge several years after the first. He concluded that surgery was not indicated unless the other kidney was normal or unless there were such severe pressure symptoms as to demand relief. He had come across no instances of this being a familial disease, nor had he seen any associated congenital deformities such as hare-lip, talipes equino-varus, &c.

Sir BERNARD SPILSBURY gave a complete account of three recent cases brought to post mortem at St. Bartholomew's Hospital.

CASE 1, under the care of Sir Percival Hartley, a man aged 52—had had chronic renal disease for many years, for which he had been invalided from the army. Two weeks before death he was seized with an attack of giddiness which passed into unconsciousness. On admission he had a left hemiplegia, frequency of micturition, and headache. Post-mortem examination showed a small hæmorrhage in the right internal capsule with advanced atheroma of the arteries at the base of the brain, and a cystic condition of both kidneys and of the liver. The liver weighed 50 oz., and scattered through it were a large number of small cysts. Otherwise the organ appeared normal. The kidneys were typical. Microscopically, the liver cysts were lined by a cubical epithelium, and there was pressure atrophy of the liver tissue around the cysts, suggesting that the cysts were actively enlarging. In addition there was a considerable quantity of proliferating bile-ducts through the liver and under its capsule. The kidney cysts were lined with cubical and at times columnar epithelium, and contained hyaline material, necrotic cells, and débris. Dense fibrous tissue riddled the kidney tissue in which there was evidence of marked hypertrophy. In a few of the cysts papillomatous growths were seen. The arteries of these kidneys showed arterio-sclerosis.

CASE 2, under the care of Mr. McAdam Eccles, was a man aged 47. In 1914 this patient was operated on for a suspected pyonephrosis. During the last few months the pain had recurred and there was progressive weakness. The urine contained blood and pus. A large tumour was present, and the case died with signs of uræmia. Post-mortem examination showed atheroma of the aorta; liver enlarged to 72 oz. and containing many cysts; both kidneys enlarged and cystic, and pyelitis in the left; and left suprarenal hypertrophied. Microscopically, liver and kidneys similar to Case 1, save that no proliferating bile-ducts were seen in this liver. Pus and *B. coli* were found in some of the kidney cysts.

CASE 3.—This was Sir Thomas Horder's third case described above. Post-mortem showed aortic atheroma, liver enlarged with cysts, kidneys very much enlarged, and both suprarenals hypertrophied. Microscopically, the liver contained proliferating bile-ducts, and the kidneys showed some amyloid change, otherwise this case corresponded closely to the others.

Sir Bernard Spilsbury summed up these cases as showing very similar kidney conditions with arterio-sclerosis, signs of chronic interstitial nephritis, hypertrophy of the heart, and aortic atheroma, and two of them suprarenal hypertrophy. The age at which these patients died was the same period at which occurred deaths from chronic interstitial nephritis. He had no doubt at all that the origin of the polycystic kidney was in some anomaly of development. He regarded the renal inadequacy as due to superimposed nephritis and not due to pressure of the cysts in the renal tissue. He believed that the

liver cysts were also due to an excess development of bile-ducts, some of which did not join up with the liver tissue. These livers showed no signs of inflammation or cirrhosis.

The PRESIDENT opened the discussion by commenting on the absence of any mention of hæmaturia as a symptom. He quoted two cases in which this had been present, one being of particular interest because a smart hæmaturia occurred at the age of 30, after which the patient had been passed as a first-class life for insurance. He had seen no associated congenital defects in any of his cases.

Dr. GRAHAM FORBES said that this question was of great interest to him as it had formed the subject of his M.D. thesis very many years ago. During the 25 or more years that had elapsed, he had found nothing of any interest to add to what he had then written. Dr. Forbes read extracts of some of the salient features of the cases he had collected at that time.

Mr. SWIFT JOLY described a case of a man with hæmaturia and a swelling in the right renal region. Cystoscopy showed the blood coming from the right ureter. The diagnosis made was malignant growth of the right kidney, which was exposed. It turned out to be a polycystic kidney and the wound was closed. Three years later that man had another hæmaturia, and cystoscopy revealed blood coming from the left ureter, and that kidney was enlarged. With regard to the familial incidence, one patient had consulted him with bilateral polycystic kidneys, saying that he was one of five brothers, all of whom had congenital cystic kidney. He did not believe that there were any indications for nephrectomy. Surgery did no good but harm. He was anxious to hear if any surgeon had tried pyelography in these cases. He had found that the shadow of the pelvis, though normal in appearance with no flattening of the calyces, yet had a very long calyx system. One of his cases the length was quite four times the normal. He suggested that this affords an early diagnostic criterion.

Mr. GIRLING BALL recalled a case of a child who died of polycystic kidney following an operation for genu valgum; also another child who died during measles from the polycystic kidney. He had recently in Berne watched de Quervain operate on one of these cases, by cutting a slice—like a slice of a lemon—out of the kidney. He claimed that fibrosis followed, and improvement in the patient. Mr. Ball was somewhat sceptical concerning the value of this operation.

Mr. C. A. R. NITCH said that he had always thought the infantile and the adult type of case were of different ætiology, and he asked Sir Bernard Spilsbury how he reconciled the one view for the two classes of case.

Sir THOMAS HORDER and Sir BERNARD SPILSBURY replied to the discussion, both commenting on the value of Mr. Joly's suggestion of pyelography in diagnosis, and in reply to Mr. Nitch pointing out that the same process was involved, the change being only a matter of degree.

PARIS: VACATION COURSE IN DISEASES OF CHILDREN.—A vacation course in diseases of children will be given at the Hôpital des Enfants Malades, 149, Rue de Sèvres, Paris, from July 24th to August 14th, under the direction of Prof. Nobecourt and Dr. Lereboullet. There will be two meetings each day, at 10.30 A.M. and 4 P.M., and Prof. Nobecourt will give clinical instruction every morning at 9.15. The fee for the course is Fr.150. A detailed programme may be obtained from the Faculté de Médecine, University of Paris.

A course of 13 sessions on the treatment of tuberculosis of the bones, joints, and ganglia, together with methods of practical orthopædics, will be given at the Hôpital Maritime, Berck-plage, from July 15th to 30th. The course will be conducted by Dr. E. Sorrel, surgeon to the hospitals of Paris and chief surgeon to the Marine Hospital of Berck, assisted by Drs. Moyer and Parin, of the Maritime Hospital Laboratory, Dr. Lance, of the Sick Children's Hospital, and others. The meetings will be held in the afternoons at 2 o'clock. The fee for the course is Fr.150. Full particulars may be obtained from Dr. Sorrel, 46, Rue du Général Foy, Paris.

Reviews and Notices of Books.

EPIDEMIC ENCEPHALITIS.

Encephalitis Lethargica. By ARTHUR J. HALL, M.A., M.D. Camb., F.R.C.P. Lond., Professor of Medicine, University of Sheffield. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd.; Bristol: John Wright and Sons, Ltd. 1924. Pp. 229. 12*s*.

THE greater part of this work formed the Lumleian Lectures delivered before the Royal College of Physicians of London in 1923 and published in abridged form in THE LANCET of April 14th, 1923. The additions made in the present volume comprise details which could not be included within the limits of the lectures, references to more recent studies and experiences since their delivery, and a section on treatment.

It was on April 20th, 1918, that Prof. Hall and Dr. Wilfred Harris independently announced in the same number of THE LANCET that within the previous fortnight a series of cases of illness presenting remarkable features had appeared in this country. Prof. Hall, although he characteristically omits to do so, can therefore claim the merit of being one of the first to detect the "new disease"; his careful notes and records of the early cases of encephalitis contributed in no small degree to the clinical presentation of the outbreak of 1918. Since then his published writings have added to our knowledge of the malady whose epidemic prevalence this year in Great Britain on an unprecedented scale makes the appearance of this book all the more timely. For the purpose of the lectures Prof. Hall has read widely. The lengthy bibliography, in main that of the Ministry of Health's Report on Encephalitis Lethargica, published in 1922, but extended and brought up to the present time by the author, numbers no less than 2056 references. It becomes almost the task of a life-time to keep well abreast of the literature of epidemic encephalitis. Indeed, it is here that we would make the most serious criticism of Prof. Hall's book. If anything, he has been too generous towards the experience and views of others and too restricted in the expression of his own. To take an example at random, in alluding to the hæmorrhagic syndrome, the writings of physicians in England, France, and America are referred to in some detail; but Prof. Hall's personal knowledge of the subject is not allowed to appear. We would also express the hope that in future editions the author will give us more instruction from his case-books; the few cases he quotes only serve to whet the reader's appetite. In Chapter IV. Prof. Hall tells us that he has been so impressed by the protean manifestations of the disease that he finds it impossible to recognise any regular distinction beyond the broader divisions of acute and chronic. Accordingly he gives no set description of the malady, but an account of the clinical manifestations that may be encountered. It is true that these are the forms which most frequently come to the attention of the consulting neurologist, yet the characteristics of epidemic encephalitis as a general infectious disease must not be ignored. The prodromal period and the onset of pyrexia too often escape recognition as part and parcel of the one disease, even although nervous localising signs appear subsequently. Further, the general features of epidemic encephalitis are in harmony with the description of the allied disease, epidemic poliomyelitis. A brief but useful account of the later manifestations of epidemic encephalitis is given. As regard treatment, the author's melancholy verdict is that "at present any reliable therapeusis, either for the disease itself or for its many after-results, does not exist."

The work constitutes a comprehensive treatise on epidemic encephalitis which neither neurologist nor general physician can afford to exclude from his book-shelf. It is well illustrated by a number of plates.

LABORATORY DIAGNOSIS OF SYPHILIS.

A Manual for Students and Physicians. By HIDEYO NOGUCHI, M.D., Ph.D., D.Sc., Member of the Rockefeller Institute for Medical Research, New York. London: Humphrey Milford. 1923. Pp. 392. 36s.

THE author considers that the laboratory procedures for the diagnosis of syphilis falls into two groups: (*a*) the detection of the causative spirochæte, (*b*) the detection of certain pathological changes produced in the tissues by the micro-organism. In the first group he believes that the dark-ground illumination is the most reliable method of demonstrating the spirochæte of syphilis, and most workers on this subject will agree with him. The chapter on microscopical technique gives many hints and much useful information with regard to dark-ground apparatus and its manipulation. We would point out that no indication is given that a high dry lens (3 mm.) with a correction collar gives as good, if not better, results than an oil-immersion lens, and, in addition, is easier to handle. The various staining methods, negative and positive, are fully dealt with, including many very recent procedures. The excellent photographs in this section of the book should prove very helpful in enabling laboratory workers to gain a thorough idea of the morphology of the various spirochætes likely to be encountered in material suspected of containing the *Treponema pallidum*.

The greater part of the volume is concerned with the sero-diagnosis of syphilis (Wassermann test). The introductory chapters give a satisfactory account of the theory of the fixation of the complement test. The main idea of the remainder of this section is to show the advantages of the author's method, using an acetone-insoluble antigen and an anti-human hæmolytic system. It cannot be said, however, that considering the tested accuracy of the Wassermann as done by modern standardised technique the author has brought much evidence to support his contention. The relative value of Wassermann methods is not a matter of opinion but of actual results, and the author's arguments without comparative tests are not sufficient to convince that his method is more reliable than the ordinary test. In fact, many sound objections could be urged against his method both from the technical and theoretical side; for instance, against the use of 2 units of amboceptor, of an acetone-insoluble antigen, and especially the failure to titrate complement in the presence of antigen before each test. As in many American books, the account of British literature is incomplete; for instance, there is no mention of any of the valuable series of reports published by the Medical Research Council on the Wassermann test and its reliability.

LE PROBLÈME DE L'ANAPHYLAXIE.

By AUGUSTE LUMIÈRE. Paris: Gaston Doin. 1924. Pp. 241. Fr.30.

THIS book deals with the problem of anaphylaxis from the latest physico-chemical point of view of the colloid. The introductory chapter reviews the subject historically in clear narrative fashion, but the bulk of the book is devoted to the modern physical conception of anaphylaxis. The author starts from the well-known Tyndall experiment on colloids and leads up to the work of Dold who has applied the principles of Tyndall in the seroscope. From this point onwards he shows step by step how the anaphylactic phenomena result from the alteration in the colloidal state of the serum of the sensitised animal brought into contact with the antigen, and he rejects, in consequence, the theory of a chemical toxic factor, believed in by the older experimenters. This alteration in the colloidal state of the serum—to use the author's own words, "la formation d'un floculat dans le sérum"—is, in the author's opinion, responsible for the anaphylactic shock by acting on nerve terminations of the endothelium of the vessels supplying the nerve centres. By this means sudden excitation of these centres produces in turn vaso-dilatation of the visceral blood-vessels and a fall of arterial pressure. Various blood changes then follow apparently as a result of alteration of osmotic pressure.

This, in brief, is the author's theory of anaphylaxis. The separate stages are worked out with logical precision, and a certain number of experiments illustrated with beautifully coloured drawings are given, but the author is led along the paths of theory faster than the facts warrant. Although the colloidal theory of anaphylaxis has much more to be said in its favour than any other, yet there are many difficulties still to be faced which the author does not even mention. There are large and important questions summed up in the terms indirect and secondary anaphylaxis yet to be answered, whilst clinical medicine bristles with points of interest to the serologist still awaiting solution. And whether or no these questions can be answered by the colloidal theory we do not yet know. The author barely mentions the large stock of material accumulated by Chandler Walker and others on protein sensitisation. In our opinion, it is on this particular question that the final test of the theories of anaphylaxis must be made. Hitherto animal experiments have by no means followed the lines of clinical experiments in protein sensitisation as applied to skin tests of asthma and gastro-intestinal disturbances, and there would appear to be still some additional factors in the problem unrecognised. As an exposition of the colloidal theory of anaphylaxis, however, this book is a useful guide, concisely and logically thought out.

POSTURE.

Körperstellung. By R. MAGNUS, Professor at the Reichsuniversität, Utrecht. Berlin: J. Springer. 1924. Pp. 740. $6.45.

THIS work contains in a fairly complete, and therefore somewhat bulky, form an account of the researches of Prof. Magnus and his pupils and colleagues which have earned world-wide fame. After dealing with the subject-matter in its general aspects, the conditions which determine particular reflexes and the maintenance of posture are considered. The chapters on compensatory posture of the eyes, and on the relations of the labyrinth, neck, and eyes to postural tonus, contain a description of some of the finest work in neurology during the present century; the clinical applications of this series of investigations must obviously be very extensive, and some interesting examples are given by way of illustration. The book concludes with a chapter on the influence of various poisons on posture. Taken as a whole, the degree of precision attained is remarkable. This knowledge has been obtained by a variety of methods—by graphic methods, direct observation, surgical experiments on the labyrinths and on the central nervous system, and by large numbers of photographs and cinematograph films. The inclusion among the 263 illustrations of a number of stereoscopic photographic reproductions adds greatly to the value of the publication.

THE SCIENCE AND ART OF ANÆSTHESIA.

By Col. W. WEBSTER, M.D. London: Henry Kimpton; St. Louis: C. V. Mosby Co. Illustrated. 1924. Pp. 214 24*s*.

THIS book is designed to help "the medical student and the physician in general practice." It is a pleasing manual in size, shape, and excellence of printing. Unfortunately it lacks many of those details which are essential in the instruction of those for whom it is intended. They are nowhere told just what to do in the process of procuring and maintaining anæsthesia. In the physiology of the drugs which he is to use and in some general principles the reader is well instructed, and help is given in these pages as to treatment before and after operation. The author states that he has purposely omitted "plates"

showing different positions of patients for different operations, and no one would blame him for that in a work of this size, but he has no fewer than nine pages of illustrations of apparatus for nitrous oxide, and this prodigality appears disproportionate. Few things are less instructive than pictures or diagrams of apparatus. The student can only learn to use apparatus by handling it, and this lesson must be enforced in a small manual. Some of these pages might well be replaced by brief instructions in the treatment of common difficulties and dangers arising during anæsthesia, a subject which the author has almost ignored.

INTERNAL SECRETIONS.

Biology of the Internal Secretions. By FRANCIS X. DERCUM, M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, Philadelphia. London and Philadelphia: W. B. Saunders Company, Ltd. 1924. Pp. 241. 14*s*.

IN giving us this account, chiefly clinical, of the internal secretions, and especially of their relations to malformations and mental diseases, the author has attempted much. The time is really not yet ripe for such sweeping applications of endocrinology, as events will no doubt prove. But if we keep the limitations constantly in mind the book should provide us with stimulating, if at times rather bewildering, reading, though its value would have been considerably increased if precise references to the authors quoted had been given. By those eager to investigate the possibilities of the clinical application of endocrinology, and their number is rapidly increasing, these pages will be read with interest.

Sexualité et Hormones. By CH. CHAMPY, Docteur en Médecine, Docteur ès Sciences, Professeur Agrégé à la Faculté de Médecine de Paris. Paris: Octave Doin. 1924. Pp. 372. Fr.30.

IN this interesting volume much of the discussion turns on the facts of secondary sexual characters and of the conditions which bring about their modification. The author considers the influence of hormones on sexual differentiation, with especial reference to the effect of the thyroid, which has been well investigated, and of the hormones arising in the gonads themselves. The localisation of the sex hormones exclusively in any one tissue, such as the interstitial tissue of the gonads, is considered to be without justification. The volume is well illustrated, contains the results of a large amount of original work, and displays much careful thought.

ATLAS OF DISEASES OF THE CHEST.

Thoraxschnitte von Erkrankungen Der Brustorgane. By Dr. WALTER KOCH, Professor of Pathological Anatomy, Berlin. Berlin: Julius Springer. 1924. Pp. 403. 810.75.

WHILE it is generally acknowledged that the physician's art should be built up on a basis of morbid anatomy, it is not so well realised how difficult it is for the majority of medical students to obtain a practical first-hand knowledge of topographical morbid anatomy. They may have demonstrated to them diseased organs which have been removed from the body, but unless time is of no object and classes are small, it is scarcely possible for them to study completely and at leisure the organs while still in the body. The same routine cannot well be adopted in the study of morbid anatomy as obtains in the dissecting room, and in consequence it is really difficult for the student to appreciate the meaning and importance of the lesions he is taught to recognise in the isolated organ. Only the individual who actually removes the viscera from the thorax in, for example, a case of pulmonary tuberculosis can fully understand the significance of the physical signs which may have been elicited during life. The teacher of morbid anatomy who recognises the limitations imposed on him by the exigencies of the medical curriculum will welcome Dr. Koch's excellent atlas. In it some 30 examples of the more chronic pulmonary diseases—pleurisy, phthisis, valvular lesions of the heart, aneurysm of the aorta, new growths, and so forth—are described and illustrated by full-page photographs of vertical sections of the thorax at different antero-posterior levels. Each figure is accompanied by an outline "key," and each case is rendered complete by the inclusion of clinical and post-mortem protocols, and a general summary or discussion. There are also admirable X ray photographs of several of the cases, which are clear and beautifully reproduced, and fulfil their purpose excellently. The Atlas should be a real help to the student in enabling him to understand more truly the actual physical condition of his patients.

CHEMICAL ENCYCLOPÆDIA.

By C. T. KINGZETT. London: Baillière, Tindall and Cox. 1924. Pp. 606. 30*s*.

TO compile an ideal chemical encyclopædia would be an impossible task. The present volume is suitable for schools, junior students, and general readers as a book of reference. To the laboratory worker it is of little value, since too little information is given. The contents are remarkably complete with regard to the number of substances referred to, but there is not enough descriptive matter. A better title would have been A Chemical Dictionary.

BIOCHEMISTRY.

The Vegetable Proteins. Second edition. By THOMAS B. OSBORN, Ph.D. London: Longmans, Green and Co. 1924. Pp. 154. 9*s*.

THE first edition of Dr. Osborn's book was regarded as one of the standard works upon the subject of vegetable proteins. The advances in this particular branch of biochemistry have been greater perhaps than in any other part, and many of these advances have originated from Dr. Osborn's own laboratory. The importance of the chemical constitution of vegetable proteins in relation to animal feeding has long been recognised, and it is mainly to the researchers in agricultural chemistry that we owe the recent increase in our knowledge. The monograph commences with an historical summary of the subject, and then proceeds to a detailed account of the classification, occurrence, composition, and chemical and physiological properties of the vegetable proteins, while two useful chapters are included on the nutritive value and on the physiological relations of the vegetable proteins to animal organisms. A full account of anaphylaxis in connexion with these bodies is given. An important chapter on the relation of the proteins to acids and bases has been provided by Prof. L. J. Henderson. The volume will prove of great use to all working on this particular branch of biochemistry.

Analyses de chimie biologique. By RENE CLOGNE. Paris: Le François. 1924. Pp. 281. Fr.14.

THE French manuals on practical biochemistry usually strike those accustomed to reading many books of a similar character as being very much out of date. The methods described are too often slight modifications of those in use 30 or 40 years ago, and it is seldom that the newest methods are included. This volume forms a pleasant exception, since it contains workable descriptions of such methods as those of Folin and Wu, Marriot and P. A. Shaffer. What is more, it is obvious that these methods have not been simply copied from other text-books, for the printer's errors in connexion with Folin's methods are not repeated with that dismal regularity with which they unfortunately appear in many of the English manuals. The working descriptions of all the methods described are clear, accurate, and concise, and the scope of the book is sufficiently wide to cover all the needs of students or a routine laboratory. The author is to be congratulated upon his work.

PROTOPLASMIC ACTION AND NERVOUS ACTION.

By RALPH S. LILLIE. Chicago, Illinois: University of Chicago Press. 1923. Pp. 417.

THE volume is based on a series of lectures delivered to biologists. The author starts by complaining that far too much attention is being paid to analytical methods for studying organisms, whilst synthetic investigations on these lines are entirely neglected. Mr. Lillie claims that the problems involved in the transition between inanimate and animate systems are no more difficult than others which have yielded to scientific investigation; and that carefully planned investigations should go a long way towards solving the difficulties. Those who are under the influence of philosophies such as that of Herbert Spencer will have little sympathy for the author's views, and will be inclined to skip the 400 odd closely printed pages. This would be unfair, since, although one may hold the view that attempts to synthesise protoplasm are a waste of time, the actual experiments upon living tissues are worthy of consideration. Thus the chapters dealing with protoplasmic response to surface tension and chemical composition of the media are very good indeed. The concluding chapter contains a useful series of comparisons between conduction in nerve and various chemical reactions. Although the objects of the book are rather vague, the experimental details form interesting reading.

MASONRY.

The Men's House. By J. FORT NEWTON. Pp. 261. *Symbolical Masonry.* By H. L. HAYWOOD. Pp. 380. *The Great Teachings of Masonry.* By H. L. HAYWOOD. Pp. 187. London: George Allen and Unwin, Ltd. 1924. 8*s.* 6*d.* each.

THESE three volumes, as their titles indicate, are written for Masons, whether they have only just become members of the craft or are well advanced in the higher degrees. But they are also of interest to the uninitiate, who will learn much about the aims of Masonry, and to a certain extent about the meaning of the Ritual. Dr. Newton's book consists of a series of papers upon various aspects of Masonry, including one on Rudyard Kipling, the Living Laureate of the Craft.

Of Mr. Haywood's two books "Symbolical Masonry" will be found most generally interesting, for symbolism and ritual appeal to every nation and class of men. The chapter on That Which Was Lost, deals with the Tetragrammaton—i.e., the ineffable Name of God. Shakespeare asked, "What's in a name?" but among primitive peoples there was a great deal in a name, for if anybody knew another's name he acquired some power over him. For instance, among primitive peoples it was almost a crime to address a fellow tribesman by his name, and instead of saying, "Old Cow, will you lend me a spear?" the would-be borrower, if he followed correct procedure, said, "Third cousin by the mother's side thrice removed, will you lend me a spear?" Among the ancient Hebrews the Name of God was regarded with such reverence that it was only allowed to be pronounced by one person on one day in the year—namely, by the High Priest on the Day of Atonement. And after the Temple was destroyed nobody ever said it at all. They *wrote* the tetragrammaton YHVH, but they *said* Adonai—i.e., the Lord—and no one knows to this day what the proper vowels for the tetragrammaton are. So the lost Name became a source of much mystical legend and teaching. Mr. Haywood's other volume deals with the teachings of Masonry and its aims and objects, and is good complement to the volume on Symbolism.

Messrs. Baillière, Tindall and Cox are the English agents for the "Annals of Medical History" of which Vol. VI., No. 1 was reviewed last week in this column. The annual subscription is £2 2*s.* per annum and the price of single copies is 12*s.* 6*d.*

EPSOM COLLEGE:

THE ANNUAL GENERAL MEETING.

AT a well-attended annual general meeting of the Governors of Epsom College, held at 49, Bedford-square, W.C., on June 27th, Dr. Raymond Crawfurd in the chair, the annual report for the previous year recorded a good total of progress. Many certificates and distinctions were obtained, while of 31 boys who presented themselves for the War Office "Certificate A" 26 were successful. From the financial point of view the income and expenditure account for the year 1923 showed a substantial surplus of receipts over payments, this gratifying result being mainly due to the receipt of £4500 from the surviving trustees of the will of the Rev. J. W. W. Taylor, to a gift of £1000 by Mr. William Tinker, "to be administered as the Council think best," and to a further donation of £1000 from Lord Rosebery, earmarked for the addition to the College chapel. The rebuilding of the nave of the chapel in harmony with the new chancel was the object of the War Memorial Fund, and this fund remains open, while special efforts are being made by the Old Epsomian Club to collect the balance still required for the completion of the nave. Cheques towards the fund, drawn in favour of the Epsom College War Memorial Fund, should be sent to Mr. S. Maynard Smith, 49, Wimpole-street, W. 1; an announcement was made in the report that the supporters of the War Memorial Fund will be given the same voting privileges as those enjoyed by contributors to the Royal Medical Foundation of the College. The health of the boys was very good during the year reported upon.

In the forefront of the report was placed a record of the services of Sir Henry Morris, who has resigned the position of treasurer, being succeeded in this office by Mr. Herbert S. Pendlebury. After the secretary of the College had read Sir Henry Morris's formal resignation, the following resolution was moved from the chair and carried unanimously:—

The Governors of Epsom College desire to record upon their minutes the deep regret with which they accept the resignation of the treasurership of the College by Sir Henry Morris, Bart., who for 18 years has carried out the onerous duties of that office with untiring zeal and energy. Only those who have been closely associated with him on the Council can realise the extent of the time and labour which he has devoted so disinterestedly to the service of the College, not only as treasurer, but also as chairman of the Works Committee, which additional office he has held for almost as long a period. In assuring Sir Henry Morris of their gratitude for all that he has done for the College, the Governors wish to endorse the expression of deep obligation which the Council has already conveyed to him, and they trust that he will live for many years to watch the continued progress of the College, and of the Royal Medical Foundation attached to it, in both of which he has been so keenly interested.

Beneficiaries under the Foundation.

The scrutineers, Dr. E. Climson Greenwood, Dr. Seymour Taylor, and Dr. Harold Spitta, then reported the successful candidates to be as under:—

For Pensionerships.

	Votes.		Votes.
*Banks, Henry	2154	*O'Connor, Jessie E. M.	1969
*Hayne, Mary A. . ..	2073	*Hind, Minna M. A. R.	1860
*Sinclair, Augustine W.	1997	†Pike, Louisa	1700
*Pinniger, Emma . ..	1986	‡Buncombe, Harriet M.	1675

* Ordinary pensioners.
† "Pugh" pensioner. ‡ "Sir Thomas Smith" pensioner.

For Annuities.

	Votes.		Votes.
§Yate, Catherine	4790	‖Brittain, Anne	2267

§ "Morgan" Annuitant. ‖ "Brodie Sewell" Annuitant.

For Foundation Scholarships.

	Votes.		Votes.
Gray, David H. . ..	13,040	Biggs, Derek R.	9868
Shepperd, Guy . ..	12,560	Taylor, Robert B. ..	9381
Trotter, C. Robert F..	11,298		

THE LANCET.

LONDON: SATURDAY, JULY 5, 1924.

MUNICIPAL AND HOME DISINFECTION.

WE publish this week an interesting article by Dr. DUNCAN FORBES, medical officer of health for Brighton, who deals from personal experience with the comparative merits of municipal and home disinfection in scarlet fever and diphtheria. In this paper there is well illustrated the change of opinion which has been going on for 30 years or more in respect of the factors which make for the spread of infection in these two diseases, and Dr. FORBES suggests that much of the elaborate and extravagant procedure which characterised the 'eighties and 'nineties and the first few years of this century was open to the charge of being ill-directed, serving little purpose except to give a fancied security to the householder. The message of the paper, indeed, is that the household, with certain well-directed assistance from the municipality, can obtain usually the same measure of security by personal efforts as by relying upon central assistance, and it need hardly be said that the more the population can help themselves in sanitary matters the better will public health be served.

Until 1909 the usual ritual was followed at Brighton of removing all persons suffering from scarlet fever or diphtheria to the isolation hospital, when thorough disinfection of the home premises was carried out. The process was extended not only to the patient's and the mother's clothing, to mattresses and to bedclothes, but to the contents of wardrobes and chests, while curtains and carpets were removed for steam disinfection and the walls, ceiling, and floor of the room lately occupied by the patient were sprayed with disinfectant. But while this drastic course was still being pursued the opinion was getting stronger that epidemic prevalence was due to personal contact with the case; it was felt that scattered organisms in the premises had no substantial consequence compared to that dependent on the massive doses of organisms to be derived from the patient and from handkerchiefs and towels contaminated by immediate discharges from the carriers. Consequently, in 1909, the steam disinfection of the bedding and mattresses was stopped at Brighton, and instructions were given to householders for the immediate and proper cleansing of linen and cotton goods which had been in contact with the sick subject and for the disinfection by boiling water of all feeding and drinking utensils, toys, books, and other articles which had been in the patient's immediate environment. Eleven years later procedure was further simplified when the spraying of the sick-room was given up, cleansing and the accompanying disinfection being left to the householder. Dr. FORBES'S paper contains a short series of figures—too short, as he admits, to constitute absolute proof of any contention—showing that at Brighton disinfection by the local authority has presented no advantage over disinfection by the housewife.

Dr. FORBES'S conclusions have been submitted by us to the medical officers of health of certain large and representative cities with the result that we find the main contentions to be substantially endorsed, with certain individual reservations due to differences of locality. But if disinfection of houses in cases of scarlet fever and diphtheria is found to be unnecessary, some of the contracts entered into by big municipalities may be an extravagance, and this is a matter which needs consideration, if only to prevent the hasty conclusion that vast and unwarranted expenditure is taking place. The Corporation of London puts down in its form for tender a probable annual requirement of 5000 gallons of disinfectant fluid of high coefficiency as well as 20 named disinfectants in fluid or powder form. Clearly no substantial proportion of these commodities is required for spraying infected chambers. It is not possible to compare accurately the bulk and cost of the disinfectants and chemicals used in various health departments because no two health departments cover quite the same ground, nor do they use the same solutions, nor apparently do they spend money in this way in any amount proportionate to the population. One progressive city, for example, with a population of nearly 1,000,000, used or gave out disinfectants from its public health department to the value of £163 for the financial year ending March 31st, 1924, a figure which shows that here no extravagance was committed. The disinfectants are used for a vast number of purposes, and non-employment in spraying premises where scarlet fever or diphtheria patients have resided would lead to little annual diminution in expense to the ratepayers. And the moral value of using disinfectants, probably not so needed in a city like Brighton as in cities where there is a great slum population to deal with, must not be left out of count.

ARTIFICIAL LIMBS.

A MEETING of representatives of associations of disabled men of Austria, France, Germany, Great Britain, Italy, and Poland met at Geneva in 1921 and appealed to the International Labour Office to help to further the production of appliances for the benefit of the mutilated and to spread a knowledge of them. The office, which is connected with, but not a part of, the League of Nations, accordingly asked Dr. FLORENT MARTIN to compile a report which should set forth what has been done in all countries to provide prostheses and other appliances for the disabled with a view to helping not only sufferers in the late war, but also those whose injuries were received in civil life. Dr. MARTIN was well known during the war as the director of the artificial limb factory at La Panne, in Belgium, where, under his direction, was made an artificial leg, the merits of which he strongly advocated. He is now director of the Technical and Scientific Institute of Artificial Limb-Fitting at Brussels, which was set up there in 1921 by the Permanent Inter-allied Committee for Disabled Men. The director of the International Labour Office, Mr. ALBERT THOMAS, who writes a prefatory note to the report, truly says that the International Labour Office would fail in its mission if it did not assert its direct value to those in many spheres who, in the words of the Peace Treaty, suffer from "injustice, hardship, and privation."

Dr. MARTIN'S task was not a light one. To survey such a large field and to summarise the work done in Europe and America, giving due importance to each type of apparatus, without exaggeration of the merits of some or depreciation of the merits of others, is not easy; nor would it be difficult to find fault with some of the statements to which Dr. MARTIN has committed himself as to the usual practice in

this country in prosthetic matters before the war and since 1914. He divides types of artificial limbs into two classes, American and European, but his descriptions of the European types are in many cases inapplicable to the limbs made in Great Britain. He is therefore not a very trustworthy guide here, and the British reader is more likely to profit by his survey of continental practice. The opinions expressed as to sites of amputations and the general principles of limb-fitting are sound, but we think that Dr. MARTIN is unduly pessimistic as regards certain end-bearing stumps. The light metal limb, which has become so popular in Britain, appears to be little known on the Continent, and its advantages and disadvantages not to be understood. The later results of cinematisation of stumps would appear to have been disappointing in France, Italy, and Belgium, as they have been here, where it may safely be said that the practice has been given up altogether. Information is lacking as to the true position of this procedure in Germany, where SAUERBRUCH continues to vaunt its success, but where most other surgeons are significantly silent on the subject. Neither is KRUKENBERG'S procedure of splitting a forearm stump in order to form "tongs" recommended by Dr. MARTIN, whose references to German methods of limb-fitting are not copious. With his views on artificial hands we are in general agreement, though he is inclined to magnify their practical value. Appliances—the simpler the better—have proved of much greater practical worth than hands, though these have greater æsthetic value. His remarks about the problems arising from loss of both hands are suggestive, but he appears to be unacquainted with the ingenious table invented by Mr. GEORGE THOMSON, of Edinburgh, which our Ministry of Pensions has supplied to handless men, and he reproduces 30 illustrations from a brochure by the English limb-maker, F. G. ERNST, on the equipment of such an amputee without mention of the author's name. This is not an isolated instance; although various American and other limb-makers are mentioned by name, none of the most successful British makers are named, although their work may be referred to.

We have nothing but praise for the public spirit and energy of the International Labour Office as shown in the production of this report, as well as in many other ways. It is to be feared, however, that interesting as it may be to surgeons and limb-makers, the British amputee will not gain much by a study of it.

THE RELIEF OF ASTHENOPIA.

BINOCULAR single vision depends upon the muscles of the two eyes being so coördinated that their combined action always maintains the parallelism of the two eyes. Its maintenance depends upon the reflex muscular response to the stimulation of light in the maculæ of the two eyes. When this stimulus is removed by the occlusion of one eye, the parallelism is still maintained, at any rate approximately, but in most cases only approximately. There is, as a rule, slight divergence, but there may be slight convergence or a slight vertical deviation from parallelism. The importance of slight lateral deviation is generally considered to be negligible so far as the necessity of treatment goes, but the occurrence of vertical deviation is found to be a not very uncommon cause of asthenopia which may call for treatment by appropriate prisms. This is the generally received view. Prof. F. W. MARLOW,[1] in an essay recently published, goes far beyond this. He finds that by occluding one eye for a long period—say, a week—an amount of latent deviation, both lateral and vertical, is disclosed far in excess of what the ordinary Maddox rod test without any preliminary occlusion reveals. As is well known, latent errors of refraction can in many cases only be made evident after the paralysis of the ciliary muscle by means of atropine. Similarly, if we had a drug capable of paralysing the external muscles of the eye we might in that way discover the position of rest. As we have not, it is necessary to use the method of occlusion which attains the same object. According to Dr. A. DUANE, such prolonged occlusion tends to make the eyes revert to their infantile state in which, not being controlled by coördinative influence, they exhibit a varying imbalance. Prof. MARLOW disagrees and cites cases in which a week's occlusion has produced an exaggeration of the pre-existing heterophoria which does *not* vary. This position of rest, he says, affords relief to the strain on the extra-ocular muscles just as the correction of a refractive error may afford relief to an over-strained ciliary muscle, and according to him the prescription of appropriate prisms determined by the post-occlusion tests may relieve cases of asthenopia in which there may be no refractive error at all and in which the ordinary tests for heterophoria give negative results. The cases to which this method is applicable must necessarily be rare. The author, however, claims to have treated successfully cases of obscure asthenopia in which refraction and the muscle balance without occlusion were both normal, or in which the refractive error had already been corrected. The treatment advocated is the constant wearing of prisms where this is possible, and when not, operative treatment which, again, resolves itself into "partial tenotomy," an operation hitherto much more in vogue in America than in England.

[1] The Relative Position of Rest of the Eyes and the Prolonged Occlusion Test. By F. W. Marlow, M.D., Professor of Ophthalmology in the College of Medicine, Syracuse University. Philadelphia: F. A. Davis Company. 1924. Pp. 96.

THE SCOTTISH BOARD OF HEALTH.

THE fifth annual report of the Scottish Board of Health has just reached us. In a brief introduction it is noted that the general death-rate per 1000 of population reached the record figure of 12·9, and that the infantile mortality has dropped to 78·9 compared with 101·4 in 1922, a retrogressive year, and 90·3 in 1921. Even the present figure can hardly be regarded as satisfactory, though it shows considerable progress. The infantile mortality rates for England and Wales for the years 1922 and 1923 are 77 and 69·2 respectively. While climatic conditions are, on the whole, more favourable in England for rearing infants, it is acknowledged that the climate of every country generates its own methods of protection, and that special precautions in severer climates may, to a certain extent, counteract atmospheric conditions. In Norway and Sweden, for example, the infantile mortality is low. To the school health service is allotted more space than in former reports of the Board. Since out of 208,706 children examined during the school year, 100,980, or 48·3 per cent., were found to be suffering from physical defects, all must share the hope expressed in the report that the development of this service, curtailed by economic conditions, may soon be extended to its full capacity. The last section of the report includes a survey of the effects of unemployment on the physical welfare of the population, on the technical skill of trained and partly-trained workers, and on morale, which deserves careful study. The conclusion is reached that, thanks mainly to comprehensive relief measures, the period of serious unemployment which has now extended over three years, is not likely to leave a serious mark on the physique of the Scottish people. But there can be little doubt that young people growing up in a world that makes no call on their capacities for service are likely to suffer mentally and morally from such unstimulating conditions, and it is obvious that a revival of trade will result in the more energetic coöperation of young people in schemes designed for the improvement of the public health.

Annotations.

"Ne quid nimis."

THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE annual report on the Museum of the Royal College of Surgeons by the Conservator, Sir Arthur Keith, opens with an appreciative account of the work done for the Museum by Prof. S. G. Shattock from his appointment as pathological curator in 1897, until his death on May 11th, 1924. Mr. Cecil F. Beadles, assistant curator, records donations made to the pathological series of specimens during the year, drawing special attention to a series of livers showing carcinoma associated with bilharzial cirrhosis, received from the South African Institute for Medical Research, Johannesburg (Dr. W. Watkins-Pitchford); shells of the fresh-water snails which form the intermediary host of *Schistosoma* in South Africa, from Mr. H. Temple Mursell, and of the Asiatic variety of the parasite in Japan from Dr. J. B. Christopherson; "radium carcinoma" of the thumb, removed from a man who had handled radium for many years, from Mr. C. P. G. Wakeley; and actinomycotic caries of foot in an ancient Egyptian, from Prof. D. Derry. The descriptive catalogue of the Army Medical Collection, which is in the custody of the Council of the College, makes good progress; the whole of Group A (gunshot injuries) has now been finally arranged and numbered. The Teratological Collection has been removed to a larger gallery and has received 14 additions during the year. The Collection of Surgical Instruments, to which Mr. Alban Doran continues to give devoted service, has been enriched by a set of thoracic callipers, goniometers, and three-plane stethometers described by the late Dr. Arthur Ransome in 1876; by the kymograph (or polygraph) used by Sir James Mackenzie before 1902; and by a number of ophthalmic instruments associated with the name of Sir John Tweedy and bequeathed by him to the College. In the physiological department, among other excellent work, Mr. Richard H. Burne, the curator, has supervised the histological examinations required by Sir Charles Ballance for experiments on the anastomoses of various nerves. Some early results of these experiments are recorded on p. 21 of this issue of THE LANCET. The Odontological Collection, of which Sir Frank Colyer is honorary director, and the Onodi Collection, under the supervision of Mr. T. B. Leyton, are being further extended. Research work is being actively pursued in all departments of the Museum and the usual courses of demonstrations were given by Sir Arthur Keith in association with the late Prof. S. G. Shattock in October, 1923, and with Mr. C. E. Shattock in March and April of this year. There remains for comment the report of the conservator on the department of human osteology, which is his own special province, and should also be a source of legitimate pride. The new catalogue being prepared by Miss M. L. Tildesley, appointed research assistant for this purpose in 1920, is only now approaching completion, since the work has been much more complicated than was estimated. It is to be hoped that it will be possible to retain Miss Tildesley's services until the work is accomplished. During the past year—through the generosity of the town council of Scarborough—an important addition was made to this collection. In the course of certain excavations the graves of men, women, and children, representatives of the population of the East Riding between the eleventh and sixteenth centuries, had to be disturbed and the remains of 130 individuals were handed over to the Royal College of Surgeons for preservation and study. Sir Arthur Keith answers the question often put to him by casual visitors to the Museum—What is the use of making such an assemblage of human skulls and skeletons? The main object is the study of man—the anatomy of his body in present and past times. His skeleton is the only permanent part of his body—it is by the study of skeletal remains, often of a fragmentary nature, that the anatomist or anthropologist has to unravel the history of man's body and trace the evolution of its various parts and identify racial migrations. The only means of telling how far man's body can withstand the conditions set up by modern civilisation is by the comparison of the same people at different epochs. This can be done only by a study of skeletal remains. The department of human osteology in the Museum is not a thing of recent creation; its foundation was laid by Hunter. The foresight of a long line of conservators—of whom not the least zealous is the present holder of that office—has made it the standard collection of its kind for the British Empire.

THE TREATMENT OF INFECTED TEETH.

IT is common knowledge that a considerable number of pulpless teeth, including many that have received dental treatment, may show areas of rarefaction of bone around the ends of the roots as revealed by radiographic examination, the lesions constituting one of the forms of dental sepsis. The modern tendency is to regard these infected areas as representing a more potentially dangerous form of focal infection than the more open lesions of pyorrhœa. The view has often been expressed that all such teeth should be removed, especially when there is reason to suspect that they may be related to some general disturbance of health. This is counsel which would put an end to a large field of conservative dentistry. These teeth are usually free from local symptoms; they are often firmly implanted and are serviceable aids to mastication. The usual method of treatment by mechanically removing infected debris from the root canals and introducing various antiseptics has the disadvantage that the chief infection is outside the tooth in the bone around the apex. Since the root canal progressively narrows towards the apex, the possibility of an antiseptic acting on the peri-apical tissues seems slight. Over two years ago H. C. Moxham [1] suggested a method of treating infected teeth by introducing an emulsion of *Bacillus bulgaricus* into the canals. He showed by laboratory experiments on freshly extracted teeth that if the canals were rendered sterile and then inoculated with streptococci or staphylococci, these organisms were killed in 24 hours by *B. bulgaricus* introduced into the canals. He followed up this work by treating infected teeth in the mouth in the same way. The root canals were mechanically cleansed and milk cultures of *B. bulgaricus* placed in the canals and sealed in for periods varying from one day to three weeks. The canals were then opened under aseptic precautions. A decided smell of lactic acid was noticed in some cases. A bacteriological test was made and it was found in most cases that living *B. bulgaricus* was the only organism present in the canals, the others having been killed. Of 25 teeth with fistulæ present 22 responded to the treatment, as shown by the rapid healing of the sinus, and no discomfort was suffered by the patient. The only way of determining whether this method of treatment can affect the diseased areas outside the tooth is by radiographic examination at intervals to ascertain whether the rarefied areas show signs of diminishing and becoming denser; a test not free from fallacies. The results, according to Moxham, are encouraging, though not conclusive. This work did not attract much attention, but recently F. C. Wilkinson [2] has published a paper describing his results, using the same technique as Moxham. He finds with the latter that the clinical results are good and that the *B. bulgaricus* effectively replaces the other organisms present in infected canals. The radiographic results are less encouraging. In one case the films appeared to show definite

[1] Dental Science Journal of Australia, March, 1922.
[2] British Dental Journal, April 1st, 1924.

evidence of osseous regeneration; in some others there was slight evidence of improvement, while the rest were doubtful or negative. The number of teeth treated was only eight; this is explained by the difficulty of obtaining bacteriological coöperation. The radiographic test is certainly not very satisfactory, for to compare films of the same tooth taken at intervals and to interpret any differences as valid evidence of anatomical change is to leave out of account various factors concerned with radiographic technique which may easily vitiate the results. A better method which might be possible in a few cases would be to select teeth showing apical rarefaction and to treat them with cultures of *B. bulgaricus* and then to trephine the bone and examine the peri-apical tissues bacteriologically, but it might not be easy to find patients willing to submit to the test even in the cause of science. The results of both Moxham and Wilkinson are sufficiently hopeful to deserve further investigation. The careful coöperation required between dentist, radiologist, and bacteriologist makes it essentially a study to be carried out in a dental hospital. The pulpless tooth forms one of the most important problems in modern dentistry to-day, and any method which might promise a solution compatible with the retention of these teeth in a healthy condition is worth investigating on an extensive scale.

MIDWIVES AND JURY SERVICE.

THE Home Secretary, having been approached by the Ministry of Health with regard to the liability of women working as midwives to serve on juries, has sent a circular letter on the subject to the undersheriffs. It is pointed out that the question of legislation to secure general exemption for all midwives in virtue of their calling will be considered when a suitable opportunity presents itself. The circular contains sympathetic reference to the undoubted need of midwives for special consideration in view of the necessary urgency of calls upon them for their attendance at confinements. Further, the Home Secretary expresses the view that in practice midwives are excused from service when their aid is urgently required, and suggests that upon undersheriffs being satisfied that a certified midwife has given notice to a local supervising authority of her intention to practise as such, a mark should be placed against her name in the jury book so as to prevent a summons being sent to her. If the terms of this instruction or suggestion are complied with, it seems that midwives will have no further ground for complaint. By a schedule to the Juries Act, 1870, a large number of classes of persons are exempted from jury service, including peers, Members of Parliament, judges, clergymen, and ministers of religion as defined by the schedule, barristers, solicitors, and various other persons engaged in the practice of the law. All registered medical practitioners and pharmaceutical chemists are also exempt, as well as officers of the navy, army, and other services, civil and otherwise, including police officers and justices of the peace.

SPLANCHNIC ANÆSTHESIA.

IN a visit to a continental surgical clinic nothing is more likely to strike an observer than the contrast of the methods of anæsthesia there adopted with those prevalent in our own operating theatres. On the Continent a reliance is commonly placed on methods of local and regional anæsthesia, whilst the skilled technique of general anæsthesia to which we are accustomed does not seem to have been developed. Yet the very skill of our own anæsthetists has largely blinded us to the undoubted advantages of local methods. As Crile pointed out, the protection of the subconscious centres is of vital importance and can only be effectively carried out by a local nerve-block. The method of splanchnic anæsthesia has been extensively used on the Continent, and the article which we publish this week, by Mr. Stanley Hillman, gives examples of its remarkable possibilities. The technique of the method is simple, though it requires accuracy of execution, and the resulting block is so complete that even the largest operations can be carried out without pain and with an absence of shock unapproached in other methods. The method consists in the injection of about 50 c.cm. of 1 per cent. novocaine into the region of the semilunar ganglia, a very fine needle being inserted on either side of the first lumbar vertebra for the purpose. A preliminary aspiration ensures that a vessel has not been entered. Not only can extensive operations on the stomach be then conducted without pain or shock, but this inhibition may persist for long after the operation is concluded and well into the period of convalescence. Brunn and Mandl in the *Wiener klinische Wochenschrift* of May 22nd, 1924, describe another remarkable use of this inhibition of the sympathetic nerves. Injecting at different levels in the dorsal region so as to block the rami communicantes of the sympathetic ganglia, they have succeeded in cutting out afferent impulses from various organs, such as the gall-bladder and kidney. They suggest the use of the method as a means of differential diagnosis between lesions of the different viscera, but they also consider that the injections may in certain circumstances have an actual curative effect. The cutting of the reflex which results relieves spasm of the musculature of the viscus, and the cases they describe suggest that under these circumstances a gall-stone may be passed or a kidney recover its inhibited function. The method appears to open up a new field and its development will be followed with interest.

MOSQUITO CONTROL AT HAYLING ISLAND.

A PIECE of interesting and useful health work about which too little is known has for several years been carried out at Hayling Island in Hants. It is concerned with the amelioration of the mosquito pest in the neighbourhood and owes its origin and much of its success to the enthusiasm and efforts of Mr. J. F. Marshall, F.E.S. He and the members of the executive committee of the Mosquito Control association have issued a third report which gives an account of the work accomplished from May, 1923, to May, 1924. It is a well-illustrated pamphlet of 12 pages which, after certain remarks on mosquitoes generally and the methods employed for their reduction, considers in some detail the objects of the Hayling Mosquito Control. This was organised in 1920 to cope with the intolerable mosquito nuisance so prevalent at a large number of summer resorts along the coast-line of Dorset, Hampshire, Sussex, and Kent. A laboratory was established at Hayling Island and investigations showed that the chief mosquito culprit was *Ochlerotatus detritus*, a salt-marsh breeder. Aided by *Ochlerotatus rusticus*, the larvæ of which are found in the stagnant fresh water of field and roadside ditches, and by *Theobaldia annulata*, whose larvæ have a liking for foul waters contaminated by sewage or other refuse, this mosquito does its best to make life miserable by its blood-sucking propensities. It has a greater range of flight than either of its two "non-salt" congeners, but the latter are often a cause of serious annoyance, and the Hayling Mosquito Control plead for the assistance of local sanitary authorities and of landowners not only against these insects, but with respect to *Culex pipiens*, the common "domestic" gnat which, though probably less blood-thirsty than the other species, yet merits attention. The intensive work of the Control against *Ochlerotatus detritus* is indicated by an excellent map of the "Salterns" area of Hayling Island, and it is gratifying to find how much has been accomplished in the way of abolishing mosquito nurseries. White Cross disinfectant in a strength of 1 part in 30,000 has been found useful as a larvicide, and water thus treated is harmless if drunk by human beings or animals. A good deal of drainage has been carried out, and it is noteworthy that the Control has received monetary support for its operations from the Ministry of Health

on the recommendation of Colonel S. P. James. The grant has been suitably bestowed for, despite considerable difficulties, marked improvements have been effected. Reference is made to the somewhat similar work carried out on behalf of the Navy by Surg.-Commander D. H. C. Given, R.N., in the Gosport and Alverstoke district, where formerly the residents were unable to sit out in their gardens of an evening owing to the attacks of mosquitoes. The use of larvivorous shrimps, which was a feature of the naval operations, is not mentioned. The report concludes with a list of the known British mosquitoes and a description of the four species with which the Hayling Mosquito Control is specially concerned. An informative museum has been established at Seacourt, South Hayling, the residence of Mr. Marshall, and is open to the public, while lectures and lantern demonstrations are given at stated times. This report records with commendable brevity and modesty work which merits recognition.

DENTAL JURISPRUDENCE.

IN a paper on the Dentist and the State, read by Mr. H. Cantor at the annual business meeting of the London Hospital Dental Society, interesting reference was made to the evidence of identity which may be obtained from the teeth of a deceased person. Cases will occur to all in which human remains have been found where the circumstances accompanying or following death have made impossible recognition by persons familiar with the appearance of the deceased when alive, or have rendered errors of identification easy. In cases of death by drowning, or where the body has lain for long exposed or long buried before discovery, the teeth may be the one distinctive and unchanged feature that survives. A murderer often makes an attempt to destroy deliberately all evidence of the identity of his victim, but even the use of fire for this purpose is apt to leave fragments which an expert can recognise who has had the mouth of the deceased under his care. Mr. Cantor gave as examples the identification of the mutilated remains of the Prince Imperial during the Zulu War through a gold filling, and of the remains of the Duchesse d'Alençon after the fire at the Bazar de la Charité in Paris, by a denture which fitted the plaster cast retained by her dentist. It is not necessary to labour the matter. The dentist clearly can supply evidence practically beyond contradiction as to the identity of human remains, if the jaws, or a reasonable portion of their dental equipment, have been preserved, if there is some clue as to the identity which needs authoritative confirmation or disproof, and if the dentist applied to has kept careful records. The limitations of this method of identification are obvious; a large class of persons do not have recourse to dentists, or at any rate do not have accurate records made of their dental conditions.

THE TREATMENT OF VENEREAL ADENITIS BY SOLAR RAYS.

THE salutary effects of the sun are commonplace knowledge in these days as they were in ancient times, when even the caves which served as dwelling places were chosen where they faced the south. Among the Romans exposure to sunlight was held to be not only a remedy but a valuable hygienic measure, and Hippocrates, Celsus, and Galen prescribed sun-baths in certain diseases. At the present day the practical application of this remedial agent has been vastly extended, and good results have been obtained in a large sphere of diseases, such as tuberculosis, leukæmia, Basedow's disease, epithelioma and dermato-syphilis. Dr. Gino Murero, of the dermato-syphilitic clinic at Bologna, publishes[1] five cases of suppurative inguinal adenitis from venereal ulcers, which tend to show that distinct beneficial effects can be obtained in intractable cases by exposure to solar rays. His technique is to choose the morning hours for the exposure, especially in the months of July and August, when the temperature is less high than during the rest of the day, thus avoiding disturbances and profuse sweating caused by excessive heat, and also because in the morning hours the atmosphere is clearer and does not absorb so many ultra-violet rays. The diseased part is exposed directly to the sun while the patient lies on a bench, the rest of the body being suitably protected by coloured curtains. The only application used was sterilised gauze. In all the five cases improvement took place almost at once after four or five sittings, but the healing process increased about the ninth or tenth exposure with the disappearance of the œdema and of the bluish-red tint of the edges, and with the elimination of the necrotic patches, which are usually seen at the base of the ulcer, and their replacement by healthy granulations and consequent transformation and diminution of sanious discharge. Cure was usually complete after 25 sittings. It is worth while drawing attention to these results, because such abscesses as sequelæ of ulcers, due to Ducrey's bacillus, by their resistance to ordinary methods of cure, are the cause of much physical suffering and expense to the patient. No special technique is needed, nor is any exclusive locality absolutely indispensable for the treatment; the patient can obtain the cure of his disease wherever there is possibility of exposing the affected parts of the body to the sun's rays. Medical observation and control, it need hardly be said, are absolutely necessary if uneventful cure is to be assured.

[1] La Riforma Medica, June 2nd, 1924.

THE PREVENTION OF AEROPLANE CRASHES.

THE aviation display at Hendon last Saturday passed off without mishap. The mechanical efficiency of modern planes will be given the chief credit for this gratifying circumstance; but according to the figures set out in a well-reasoned contribution to the U.S. Naval Medical Bulletin for March, praise should be offered rather to the qualities of quick judgment and resolute decision possessed by the British and French aviators who took part. Under the title of "Aviation Accidents and Methods of Prevention" Lieutenant J. F. Neuberger, Medical Corps, U.S. Navy, who has been serving in the flagship of the Aircraft Squadrons Scouting Fleet, discusses the lessons to be learnt from the statistics collected. The causes of investigated crashes in the experience of the U.S. Navy in 1922 were physical and mental defect, 60 per cent.; insufficient knowledge and experience, 10 per cent.; mechanical (plane or motor), 24 per cent.; weather, 4 per cent.; unavoidable, 2 per cent. The chief cause of crashes is thus some mental defect, including error of judgment, in the aviator himself. It is pointed out that slowness of reaction time should be recognised during the medical examination of the candidate for the Air Force; the slow-reacting man might just as well be disqualified then, or when undergoing recruit training, as later. At this stage he will not have killed anyone or caused loss to the public by damaging expensive machinery. Most men learn to fly in eight hours; why trouble to accept those who cannot learn under 10? Medical officers of aviation units should be officers who themselves fly, are keen on flying, and understand the aviators' difficulties. A flight surgeon should be told off to go through the recruit's course with each batch under instruction, that he may know the individuals intimately, and be able to estimate their flying ability with full understanding. Medical observation should not cease when they are graded pilots, but should be continuous until they fly. The U.S. Navy uses the Schneider test, which relies on blood pressure variation lying and standing, and on the effect of exertion on the pulse-rate. It is noteworthy that at a great flying school 66 per cent. of the accidents happened on Mondays or on days after holidays. Lieut. Neuberger urges that the medical officer should not be regarded by the aviator as an

enemy, but as an adviser who saves him from accidents and teaches him how to master conditions which may lessen his efficiency, cause his retirement, and shorten his life. The author discusses in detail safety helmets, goggles, clothing, protective padding of machines against injuries, parachutes, and swimming jackets; he pleads for the provision of (1) a first-aid box, and (2) food and water in every plane, and asserts the need for an inquiry into every crash by a board, on which shall sit a medical officer, charged with the duty of examining the aviator's medical record, to see if an explanation of the disaster can be found there.

ACCLIMATISATION IN THE TROPICS.

IN presenting the play "White Cargo," which is now being performed in London, the author, Leon Gordon, states that he has made no conscious effort to create or eliminate sensationalism, but has attempted to portray the struggle for development in a country which steadily defies the encroaching civilisation, and where the reaction of an ever-shining sun breeds inevitable rot—a rot which penetrates not only the vegetation and inanimate objects, but the minds and hearts of the white men who attempt to conquer it. The symptoms of mental and physical decadence produced by residence in a hot and malarious district are, indeed, well reproduced. Acclimatisation in such an isolated and unhealthy area may mean simply mental and physical deterioration. A treatise,[1] published recently by a French author, reaches a similar conclusion as regards physique and morale in the tropical French colonies. He states that sojourners in the French tropics compare unfavourably with those in the British tropics, the chief reason being the lack of active exercise in the former. The Britisher plays games regularly all the year round, whereas the French colonist leads a uniform sedentary life. Possibly the Britisher is nearer to true acclimatisation thereby.

Perhaps in its most exact meaning acclimatisation is the process of becoming accustomed to a new climate and its conditions, with maintenance of full physical and mental vigour. The main difficulties in the way of acclimatisation in the tropics are evil influences of climate per se, parasites, unhygienic conditions, altered habits of life, altered social states, sedentary routine, over-indulgence in food, and last but not least, alcohol. Many have seen the tableaux in the Tropical Health section housed in the pavilion of His Majesty's Government at Wembley. These demonstrate how, by human effort intelligently directed, the "white man's grave" of 25 years ago has become a centre of health and prosperity. Indeed, there exist some tropical cities from which all the opposing influences enumerated, with the exception of climate, have been eradicated, at least in so far as some white men are concerned. Having reached this advanced state of sanitary and moral excellence, are we in a position to say that these white men have become fully acclimatised in the sense defined above? Judging from the evidence reviewed recently by such authorities as Prof. van Eijkman and Dr. Andrew Balfour, the answer must be No. In spite of our success in stamping out malarial and such-like parasites, and in introducing all kinds of outdoor and indoor exercise and other healthy recreation, there still remains the depressing effect on the nervous system with its states of exhaustion and psychical irritability, for which the only cure is a prolonged vacation in a temperate clime. Possibly we are now just beginning to see clearly these effects on the efficiency and nervous mechanisms of the white man, because formerly such symptoms were masked by concomitant tropical disease due to known bacteria and parasites. Very probably these nervous effects are due to continuous heat, although we must not forget the possibility of an unknown bacterial or parasitical agent. At present it would appear that brain-work, with its more sedentary and indoor conditions, leads sooner to nervous symptoms than an outdoor occupation such as planting. It is only by a clear understanding of the present position that we shall make any real advance towards maintaining our fellow countrymen in the tropics in the full mental and physical vigour to which they have been accustomed at home, and which alone spells content to the white man.

[1] Les Blancs en pays chauds. Déchance physique et morale. By Jaureguiberry. Paris: A. Maloine et Fils. 1924. Pp. 60.

MEMORIAL TO THE LATE SIR WILLIAM MACEWEN.

THE movement, which took formal shape a month ago, in favour of the commemoration of the life and work of the late Sir William Macewen, was carried a stage further at a meeting of the General Committee of the Memorial Fund, held on June 26th, in the Hall of the Royal Faculty of Physicians and Surgeons, Glasgow. At the original meeting, held on May 22nd, it had been remitted to an executive committee to consider and report on the form or forms which the memorial should take. The executive were now able to present a unanimous report, which, with very slight verbal alteration, was adopted by the General Committee. It is proposed to apply the funds that may be raised to three main purposes, in the following order: 1. The provision of a bust of the late Sir William Macewen, by a sculptor of eminence, with a replica for presentation to Sir William's family. It is intended that the bust shall be placed in the University. 2. The establishment of a memorial lecture, or prelection, to be called the "Sir William Macewen Lecture, or Prelection"; this lecture to be delivered annually, or biennially, as funds may permit. It is intended, further, that this lecture should not be merely a memorial oration, but should deal with any branch or aspect of surgical science. 3. The foundation of a Macewen medal or prize in surgery, to be awarded annually. The decision as to whether this should be assigned to the class of surgery at Glasgow University or should be given a wider application has been deferred for further consideration. A preliminary report as to the probable cost of the bust and replica was made by Dr. A. Freeland Fergus, on behalf of the executive, and the General Committee desired the executive to make such arrangements as may be required to carry through the scheme. It was intimated that already a number of substantial subscriptions have been secured, though no circular has yet been issued. The executive of the Memorial Fund consists of the following: Dr. A. Freeland Fergus (chairman), Sir Hector C. Cameron, Sir John Reid, Prof. T. K. Monro, and Mr. J. H. Pringle (vice-chairmen); Colonel J. A. Roxburgh, Mr. William Gray, Prof. Graham Kerr, Prof. W. K. Hunter, Sir Archibald Craig, Dr. J. N. Marshall, Dr. George A. Allan, Dr. J. G. McCutcheon, Mr. James MacFarlane (treasurer), and Mr. Archibald Young (secretary). In view of the present holiday season, it was resolved that the executive should defer the issue of a circular until a little later in the year. The committee is prepared, however, to receive subscriptions now, and such subscriptions should be sent to the Hon. Treasurer of the Memorial Fund, Wesleyan-street, Glasgow.

WE regret to announce the death on June 30th, at the age of 69, of Prof. Charles Hunter Stewart, who held the Chair of Public Health at the University of Edinburgh.

THE following have been elected as members of the Dental Board of the United Kingdom: To represent qualified dentists, for England and Wales, Mr. W. H. Dolamore and Mr. W. R. Ackland; for Scotland, Mr. W. Guy; and for Ireland, Mr. J. J. Andrew. Mr. F. Butterfield and Mr. W. F. Bowen have been elected to represent dentists registered under the Act of 1921.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXVIII.

TREATMENT OF THE COMMONER AFFECTIONS OF THE SCALP.

Scurfiness.

IT is not proposed here to say anything about localised patches of scurfiness due to specific conditions such as ringworm, psoriasis, &c., but to deal only with those conditions which are usually included under the term pityriasis of the scalp. Two forms are recognised: a dry form (pityriasis simplex), and a moist or greasy form (pityriasis steatoides). In the former there is a simple hyperkeratosis of the scalp with desquamation, while in the latter some inflammatory exudate of serum has taken place among the scales, thus altering their character. There is, however, no hard-and-fast dividing line between the two conditions.

Pityriasis Simplex.—Pityriasis simplex may occur in children, not infrequently in infants, in whom it often first makes its appearance in the form of rings. It is, however, chiefly seen in adults, particularly in men. It is generally due to bacterial infection, the infecting agent being probably the bottle bacillus, but in some cases it is due simply to a deficiency in the normal oil secreted by the skin glands, as, for example, in xerodermia. A differentiation between the two types is not always easy, but the general dryness of the rest of the skin and hair should favour a diagnosis of the latter type. Microscopic examination of the scales is helpful but not conclusive, as the bottle bacillus is a normal saprophyte of the scalp.

Treatment will vary in the two conditions. It is obvious that if the skin is too dry repeated washings are not likely to help, whereas if a bacterial infection is present these may be of considerable value. In the former case, therefore, in boys and men, it is best to confine washing of the scalp to once a week, and to give some slightly oily preparation to replace the missing oil of the skin. In women, washing the head once a fortnight will usually suffice. In mild cases it is better to give a lotion containing a small amount of oil, such as will be described presently, while in the more severe cases it will be advisable to use an ointment. In women the lotion should always be used.

In the bacterial cases washing should be more frequent, twice to three times a week in men, and once a week in women. Ext. quillaiæ liq. (B.P.C.) is an excellent shampoo lotion, but any good soap may be used for the purpose. Medicated soaps have no special value and the stronger spirit soaps are better avoided. Mild antiseptic lotions should be applied daily: resorcin is one of the best, but should not be used in people with white or fair hair, as it stains a greenish colour. A usual formula is: ℞ Resorcin ʒi., sp. coloniensis ℥i., ol. ricin. ʒii., aquam ad ℥viii. Hydrarg. perchlor. gr. ii., or chloral hydrate ʒi., may be substituted for the resorcin or combined with it if desired. These lotions should be massaged into the scalp once daily, and always after washing the scalp. In more severe cases it may be necessary to prescribe an ointment. The best basis for this is the combination of soft paraffin and cocoanut oil suggested by Whitfield, which is not messy and is easily washed out of the scalp; it has the disadvantage of getting very liquid in hot weather, and though this does not limit its efficacy it makes it difficult of transport. The best antiseptics to use are sulphur and salicylic acid, and a useful formula is: ℞ Ac. salicyl. gr. xv., sulphur. sublim. gr. xv., ol. lavand. ♏iv., paraff. moll. ʒii., ol. cocois nucifer. ad ℥i. Crocker's formula of resorcin, sulphur, and thymol, prescribed as ℞ Ung. thymol. co. dilutum (B.P.C.) is also very useful, but has a lanoline basis which is disagreeable to some people. In this condition, too, it is rarely necessary to use ointments in women.

Pityriasis Steatoides. — Pityriasis steatoides is merely an exaggerated form of the bacterial type of pityriasis simplex with some exudation. The scales are greasy and more profuse, but there is no associated redness of the underlying scalp. Sabouraud considers that in this condition the infection is due to the bottle bacillus acting in symbiosis with the *Coccus cutis communis*. The treatment is the same as for the last-named condition, but caution is required to prevent irritation of the scalp or an acute seborrhœic dermatitis may be precipitated. In addition to the drugs already mentioned, tar is of considerable value: it may be used alone or in combination with other antiseptics. A good formula is ℞ Anthrasol gr. xx., ac. salicyl. gr. v., paraff. moll. ʒii., ol. cocois nucifer. ad ℥i.

Acute Seborrhœic Dermatitis of the Scalp.—In this condition redness of the scalp occurs associated in the milder cases with greasy scales and in the more severe cases with weeping and crusting. The condition is usually only a more acute type of pityriasis steatoides. It is well to cut the hair as short as possible, though in less severe cases in women this can usually be avoided. Soaps should not be used, but scales and crusts should be removed by bathing in warm water or warm alkaline solution made by adding a teaspoonful of washing soda to a wash-hand basin of water. If the crusts are very thick, starch poultices are called for. In the more acute cases ℞ Hydrarg. perchlor. gr. i., linamentum calcis ad ℥viii., is a useful application, or if mercury is not well tolerated sulphur. præcip. ʒi., or acid. salicyl. gr. xxx., may be used instead. In the milder cases tar ointment may be used. As the inflammation subsides the treatment recommended for pityriasis steatoides may be employed.

Seborrhœa Capitis.

This is a state of excessive oiliness of the scalp, and varies from a slight greasiness of the hair to a condition in which the hair follicles are filled with greasy plugs, and the scalp is covered with a fatty exudate. The condition is due to over-activity of the sebaceous glands, and may occur alone or in conjunction with pityriasis steatoides. It usually begins about puberty, being most severe in early adult life and diminishes thereafter as age advances. Certain metabolic disturbances may be partly responsible for the condition, though racial and familial influences also play a part, and it is therefore necessary to rectify, if possible, any general metabolic disturbance, particularly by regulating the diet. Local treatment consists of frequent washing of the scalp, as described above, and the application of astringent and antiseptic preparations. The most suitable are alcoholic lotions. Greasy preparations should obviously be avoided. Useful formulæ are: ℞ Resorcin ʒi., acid. acetic ℥ss., sp. vin. rect. ℥ii., aq. rosæ ad ℥viii.; or hydrarg. perchlor. gr. ii., sp. coloniensis ℥i., sp. vin. rect. ℥iii., aquam ad ℥viii.; or liq. calcis sulphuratæ (B.P.C.) ʒi., glycerin. ʒi., aquam ad ℥viii.

Loss of Hair.

Apart from general alopecia of the scalp, due to some acute illness, from alopecia areata, or from localised baldness due to inflammatory conditions of the scalp, loss of hair can roughly be divided into two groups: (1) calvities, which is only seen in the male, and consists of a progressive loss of hair, commencing on the crown of the head and the frontal region and going on to complete baldness of the top of the head; and (2) a general thinning of the hair, often most marked on the vertex, which is most commonly seen in women from the age of 30 onwards. The first-named condition is most frequently seen in middle-aged and old men, but in the premature form complete baldness of the crown may have taken place in the early 'twenties. This condition is thought by

Sabouraud to be mainly due to seborrhœa capitis; many other factors have been invoked, of which heredity is the chief, but it is quite clear that no theory is completely satisfactory. A great deal can be done by preventive treatment, but this, to be of any value, must be commenced at an early age. In fact, general attention to the hygiene of the scalp from childhood is the best preventive of premature alopecia. This should consist of regular weekly washing of the scalp. The hair should be kept fairly short, and undue dryness or greasiness dealt with on the lines suggested above. Each individual should use only his own brush and comb, which should be washed frequently. The brush should not be too hard. People should be encouraged to patronise only those hairdressers who sterilise their instruments between each customer, and who provide a freshly sterilised brush for each individual. All violent treatment of the scalp, as by the machine-brush, should be condemned. The use of hair lotions, &c., of unknown composition should be avoided. When any evidence of excessive hair loss appears, gentle massage of the scalp may be practised and rubifacient lotions used, a favourite one being: ℞ Acetum cantharides ℥ii., sp. coloniensis ℥ss., sp. vin. rect. ℥iss., aquam ad ℥viii. Pilocarpine is claimed to have a specific action, and may be used as follows: ℞ Pilocarpin. nitr. gr. xx., sp. rosmarin. ℥ss., alcohol (60 per cent.) ad ℥viii. There is little evidence that any of the many vaunted remedies for this type of baldness—vibro-massage, high frequency, &c.—have any definite action; the first-named may occasionally set up an acute seborrhœic dermatitis. Ultra-violet light, by producing hyperæmia of the scalp, may have a slight action in stimulating hair growth, but it requires to be handled with very great care. There is no reliable evidence forthcoming of the value of internal remedies in this condition.

While this type of alopecia does not appear to be associated with any derangement of the general health, the general thinning of the hair seen commonly in women is often associated with some general disturbance. Disturbances of function of the nervous system, the genital organs, the gastro-intestinal tract, or the thyroid may be associated with hair loss. Apart from correcting these errors, the scalp should be kept in a healthy condition on the lines already indicated. Doubtless in a few years' time it will be unnecessary to differentiate between the sexes, but at the present time for those girls who wish to let their hair grow long, careful brushing night and morning will help to keep the hair in good condition.

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THE appointments held by Mr. F. A. Williamson-Noble, the author of No. LXXVII. of this series, on the Treatment of Conjunctivitis, are assistant ophthalmological surgeon to the Westminster Hospital and assistant surgeon to the Central London Ophthalmic Hospital, and not as previously stated.

TREDEGAR HOSPITAL, MONMOUTHSHIRE.—A new operating theatre, the gift of the directors of the Tredegar Iron and Coal Company, has been added to the Tredegar Hospital, Monmouthshire.

WESTMINSTER HOSPITAL REOPENING. — As we announced on April 12th, Sir H. M. Mallaby-Deeley offered to double all the contributions received for the Westminster Hospital from April 2nd to June 30th, up to a total of £16,000. This sum has now been received in contributions, with the result that Westminster Hospital will be reopened on July 15th with 230 beds in what is practically a new building equipped with every modern improvement for the treatment of patients. It is satisfactory also to know that the hospital will open free of any debt incurred by the reconstruction of the building, inasmuch as £70,000, the cost of rebuilding, have been met by voluntary subscriptions.

Special Articles.

DISINFECTION BY THE MUNICIPALITY AND BY THE HOUSEWIFE IN SCARLET FEVER AND DIPHTHERIA.

A CONTRAST.

BY DUNCAN FORBES, M.B.E., M.D., CH.B., B.SC. EDIN., D.P.H.,
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IN the 'eighties and 'nineties and the first few years of this century the infections of scarlet fever and diphtheria were believed to be conveyed largely by direct contact with clinical cases and in no small degree by infected articles. To control the spread of these diseases fever hospitals were built for the isolation of patients and careful disinfection followed the removal of the patient to hospital. The campaign to stamp out these two diseases was carried on with commendable vigour. Even only children who could have a room to themselves and be looked after by their mother at home were sent into the fever hospital, and the higher the percentage removal to hospital the more hopeful was the medical officer of health of controlling spread. Disinfection was also thoroughly carried out, the patient's and mother's clothing, the mattress and bedding, the contents of wardrobes, chests of drawers, boxes, all curtains and hangings, and carpets were removed for disinfection by steam, and the walls, ceiling, and floor of the room were sprayed with disinfectant. When a return case was reported a systematic search was made for articles which had not been disinfected and had been taken out on the return home of the patient, as these non-disinfected articles were considered probable causes of return cases.

With the failure of isolation in hospital and of thorough disinfection to stop the epidemic prevalence of these diseases, with increased evidence of the dangers arising from the carrier and the missed case—more dangerous than the clinical case because of their wider sphere of action—the hospital came to be considered as a convenient, although expensive, centre for the treatment of these diseases and only necessary for isolation in special cases—for instance, from boarding houses, resident schools, the families of milkmen, teachers, overcrowded houses, and so forth. Disinfection for the same reasons was less and less considered an important factor in the prevention of spread, especially as proof accumulated that the organisms of many acute diseases are delicate and die quickly outside of the body. For these reasons fewer articles were removed for steam disinfection, carpets, hangings, and even the mother's dress were disregarded, and in many cases only the bedding, including the mattress, and the personal clothing were removed. Similarly spraying of rooms became less common and was in some cases replaced by a perfunctory disinfection by gas, the latter in order that something could be said to have been done.

In substituting cleansing and disinfection by the housewife for municipal disinfection I was influenced by the considerations set out above, chiefly perhaps by picturing immense numbers of constantly escaping active organisms in the carrier and comparing these with scattered organisms living under adverse conditions outside the body and dying in great numbers. My conclusion was that infection was due to the reception of organisms in massive dose from hands, handkerchiefs, towels, and such-like, and within a short period of their escape from the carrier. Having come to this decision, I consulted two well-known bacteriologists, who agreed that in scarlet fever and diphtheria the present methods of disinfection might safely be discontinued. Further, in conversations with other medical officers of health, I found that most agreed that mattress disinfection usually accom-

plished no useful purpose and that the spraying of walls was unnecessary.

Instructions as to Cleansing and Disinfection after Scarlet Fever and Diphtheria.

The first step taken in 1909 was the stopping of the steam disinfection of the bedding and mattress, when a pamphlet of instructions to the following effect was left with the parent:—

As the infection comes chiefly from the throat and nose the following measures must be taken immediately after the removal of the patient.

1. All bedclothes and particularly sheets, pillow-slips, and handkerchiefs which are in *contact with the nose and mouth* must be put into water at once and washed,* linen and cotton goods being brought to the boil in soapy water. The above applies equally to the attendant's clothes.

2. All feeding and drinking utensils used by the patient must be kept apart and be placed in boiling water for five minutes and then be thoroughly rinsed and cleansed.

3. All pens, pencils, toys, and books used by the patient whilst ill are best burnt if of little value. On the other hand, if the parents prefer it (*a*) pens and pencils can be put in boiling water for a few minutes; (*b*) many toys can be boiled or thoroughly washed. Books are difficult to disinfect, so if of value, or if they belong to a library, the parents should have them called for from this office.

The Rooms Used by the Patient must be Spring-cleaned.

If the above instructions are carefully attended to there is no need to spray or fumigate the bedroom or to move bedding for steam disinfection; such spraying and stoving will only be undertaken if the cost is paid in advance. When the inspector calls to see that cleansing has been thoroughly carried out he will be pleased to advise on any doubtful point.

* To send goods *which have been exposed to infection* to a laundry except notice is given that they have been exposed to infection and except proper precautions are taken in transmission, renders the sender liable to prosecution.

An 11 years' trial was given to this experiment and then, in May, 1921, a further step was taken. Up to that time rooms had been sprayed, thereafter even that was stopped.

Much discussion has recently taken place as to the advisability of giving up municipal disinfection, and I am surprised to find how little is claimed for it by those who advocate its continuance. Briefly, their argument is as follows: "Disinfection by the local authority may not do much good, it cannot do harm; even if it saves an occasional case which will not affect the position statistically it is still worth doing." I venture to disagree with these statements. In the first place I think that reliance should be placed on the available statistics until further proof is forthcoming. It is for this reason that I have set out shortly the Brighton figures collected over many years.

Brighton Statistics.

A = Disinfection by the municipality, 1900–09 inclusive.
B = Municipal disinfection stopped but rooms sprayed, 1910–20 inclusive.
C = Disinfection and cleansing entirely by housewife, 1921–24, three years.

—	Cases removed and cases per 1000 of population.	Day on which subsequent case occurred—					Total after seventh day.
		0–7	8–14	15–21	22–35	35+	
A	2103	85	18	10	5	4	37
	Per 1000	40·4	8·6	4·8	2·4	1·9	17·6
B	3027	119	27	12	7	5	51
	Per 1000	39·3	8·9	4·0	2·3	1·6	16·8
C	752	21	10	2	—	1	13
	Per 1000	27·9	13·3	2·7	—	1·3	17·3

These statistics, so far as they go, show that disinfection by the local authority presents no advantages over cleansing. The figures are small, and it would be absurd to consider that they prove conclusively anything one way or other, but they are the only figures available to me and they are sufficient to provide reasonable grounds for the trial of cleansing and disinfection by the housewife in other towns. That is really all I hope for—namely, that the experiment will be given a fair trial in a number of towns and that all of us will keep an open mind on the subject until the accumulation of figures leaves no reasonable ground for doubt as to which method is the better. In this connexion I would suggest that the Ministry of Health or the Society of Medical Officers of Health should arrange for the collection of statistics from many towns, the medical officers of which agree to follow out one or other method strictly.

The "disinfectors" no doubt will say, "Why abandon disinfection which can do no harm?" The reply is, "It is not proved that the orthodox method does no harm." Personally I believe that it may do serious harm. A child is removed to hospital and the floor and walls of the bedrooms, and it may be the living-room, are thoroughly wetted What more likely in winter, when these diseases are most prevalent, that carriers develop colds and become more infectious. Also the disinfection leads frequently to the closing for the following night of the child's bedroom and the crowding of the other members of the family together, again adding to the danger of infection from the carrier. But apart from this and of greater importance is the fact that the public are not educated and are given a false sense of security. They say, "Disinfection has been thoroughly carried out at great expense and trouble, what more is wanted?" On the other hand, when no disinfection is carried out by the municipality the public learn to rely on themselves, they learn what is the chief danger, and how they themselves can help in preventing the spread of the disease; they receive no sense of false security, and in our experience are the more willing to be taught. In addition, I need hardly point out that the funds available for health work at the present time are limited and that money spent in disinfection curtails work in other directions.

It is admitted that it is a hard thing to abandon old customs and to admit that for years money may have been spent needlessly and advice may have been wrongly given, but persistence in a doubtful course will do more harm to our prestige in the long run than a sincere endeavour to get at the truth and act accordingly whatever the immediate consequences.

TUBERCULOSIS.

Vaccination against Tuberculosis.

Dr. A. Calmette has long urged the view that the control of tuberculosis depends on preventing the dissemination of the bacilli by treating every tuberculous man or animal, however slightly affected, as a potential source of danger and on being able to protect artificially the susceptible individuals by some method of vaccination. The former part of his programme is largely a question of the cultivation of public opinion and the practicability of administrative control. The latter part depends in the first instance on animal experimentation, to which he has applied himself for many years with varying, but never really very substantial, success. He now, in conjunction with Dr. C. Guérin, reports [1] a series of observations on calves in which most encouraging results have been obtained. The animals received when quite young a large dose, 50 or 100 mg., of a non-virulent live culture subcutaneously and subsequently, at intervals varying from 1 to 18 months, resisted an intravenous dose of virulent organisms to which the controls all succumbed. The vaccinating strain was originally a very virulent bovine culture, which since 1908 has been continuously grown on potato cooked in ox-bile with 5 per cent. of glycerine. After 13 years and some 230 subcultures this strain was found to have lost virulence for all species of animals; 10 mg. will not infect a guinea-pig and by no route of introduction will it cause the formation of tubercles. On the other hand, it has a certain amount of toxicity, tuberculin of an ordinary potency can be prepared from it, and

[1] Annales de l'Institut Pasteur, 1924, xxxviii., 371.

it is antigenic in the sense that inoculation excites the formation of antibodies demonstrable by complement fixation. The test dose was 5 mg. of a virulent bovine culture injected into the jugular vein, the virulence being such that 1/250 mg. would kill a guinea-pig.

It remains to work out in detail the exact reasons why these experiments have succeeded where so many others have failed. It seems fairly clear that the most important factor is the introduction of live bacilli which will not cause infection but will survive in the tissues till they are destroyed by the natural processes of phagocytosis and digestion, through which foreign particles in the tissues are ultimately got rid of or are eliminated by the bowel or in milk. Dr. Calmette looks upon the relation of such organisms to the tissues of the host as of the nature of a symbiosis; so long as the bacilli live, so long will the host be stimulated to protect itself against either an outbreak of virulent bacilli, which may be lying latent somewhere in the body, or the introduction of infecting organisms from outside. But he regards the protection as dependent on the continued life of the vaccinating bacilli and advises that cattle should be dosed soon after birth and thereafter annually. Another point which may have helped to determine the successful issue is the large size of the vaccinating dose. There appear, however, to be no data to determine the influence of this factor or its relation to the duration of resistance.

The complete control of bovine tuberculosis would make a good deal of difference to tuberculosis in children. It may be that Dr. Calmette's vaccine will give comparable results when applied directly to human infection. There is no reason to doubt the soundness of the common belief that small doses of live bacilli in childhood do actually confer a certain amount of resistance to subsequent infection. Proposals have often been canvassed for reproducing this observational phenomenon in man; how far they have been actually tried is uncertain, though if any definite success has been achieved it has not been published. The complete loss of virulence of Calmette's bile culture seems fully established and its application to man is not beyond the bounds of reasonable human hygiene.

An Indictment of X Ray Treatment of Surgical Tuberculosis.

The discussion on actinotherapy in tuberculosis at a recent meeting of the Danish Medical Society in Copenhagen seems to have resolved itself, according to the official report,[2] into a spirited indictment and defence of X ray treatment. Dr. Axel Reyn, the head of the Finsen Institute, was the chief witness for the prosecution, and he was the better able to portray X ray treatment in a lurid light for having at his disposal many cases of X ray lesions sent to the Finsen Institute for repair. Finsen light, it would seem, is one of the best remedies for X ray burns and other X ray injuries, and it is therefore natural that the sins of all the Danish X ray specialists and X ray dilettantes should finally come to roost at the Finsen Institute. X ray treatment has been given at the Finsen Institute, as well as other forms of actinotherapy, but the results have not been so good as after treatment with concentrated or diffuse carbon arc-light. In the period 1910-20 there were 553 cases of tuberculous adenitis treated partly with the X rays and partly with carbon arc-light baths, supplemented by concentrated carbon arc-light on fistulæ. Recovery was effected in 98 per cent. of the cases treated with carbon arc-light, and in only 40 per cent. of the cases treated with the X rays. The arc-light bath was found to have a remarkably vitalising effect, restoring general bodily and mental vigour to the patient. Dr. Reyn was not in favour of abandoning X ray treatment altogether, and he suggested that in small doses, which were certain not to harm, they might be a useful supplement to other methods. Several of the speakers who followed him held very different views as to the dangers of X ray treatment, and one of them referred to re-examinations he had made of patients given X ray treatment between 1920 and 1922 for tuberculous glands. He had faced these patients again in fear and trembling, but he had been rejoiced to find that though an interval of at least a year and three months had elapsed since the X ray treatment had been given, there was no case in which serious X ray changes in the skin could be found. Both the opponents and supporters of X ray treatment found themselves on common ground when the discussion veered round to the dilettante radiologist. There were, of course, no dilettante radiologists speaking as such at this discussion, and there was not a discordant note when one speaker after another referred in terms more vigorous than polite to the physician who believes that he has but to purchase an X ray plant in order to blossom out as a radiologist.

[2] Hospitalstidende, 1924, lxvii., 96.

The Papworth Tuberculosis Colony.

The last report of this colony, presented at the seventh general meeting, is full of the buoyant faith which have been among the chief sources of the colony's vitality. In almost every respect the colony has doubled itself since the preceding year, and there are now 196 persons settled in the village, including 70 children. Only in one of these 70 children has evidence of tuberculosis been found, and Dr. P. C. Varrier-Jones sees in this observation the prospect of rearing from tuberculous stock a new generation both tubercle-free and resistant to tubercle. The work allotted to the patients is never useless and is always chosen so as to suit the strength and inclinations of the patient, whose wages rise as his health improves and his working hours approximate to those of an able-bodied man. The inhabitants of Papworth need not ration their ambitions any more than a corporal in Napoleon's army, and as the ex-patient's skill increases, he has the opportunity to gain both financially and in status in his particular industry. "The big jobs are open to him as well as the small ones. There are no highly paid fit men acting as officials in the industries, all such posts are held by ex-patients. . . ." As in previous reports, Dr. Varrier-Jones gives an account of each of the main industries such as carpentry, poultry-farming, gardening printing, sign-writing, cabinet-making, upholstering, portmanteau and boot-making, tailoring, hand-made jewellery, and leather work. Almost every occupation seems to be represented at Papworth.

There is a point on which this report is not as communicative and instructive as it might be. It would be interesting to learn how many, or what proportion, of the patients entering Papworth settle there as permanent colonists. A clue, but only a clue, to this point is to be found in the statement that "the total number of inhabitants now settled in the village is 196. . . . The number of admissions to the central institution and Homeleigh during 1923 has been 222." Further information on this point would be of great value in estimating the approximate number of patients who would "make good" in colonies of this kind, supposing the Papworth model is accepted as satisfactory, and the copying of this model elsewhere is found desirable. It has been argued that many, perhaps most, consumptives sooner or later hanker for the comforts, or rather the discomforts, of their old homes, even though they be in squalid surroundings. To rub shoulders with the able-bodied man in the street and not always to be associated with one's fellow-sufferers are cravings which some patients experience. It is a pity that when the Anglo-Saxon acquires tubercle he cannot always discard his vagrant temperament.

DR. ATKIN SWAN MEMORIAL FUND.—A fund has been opened for a memorial to the late Dr. Charles Atkin Swan, with the object of endowing a Dr. Atkin Swan cancer bed at St. George's Hospital, London. The sum required is about £1000, and contributions may be sent to the fund at Westminster Bank, 1, Cavendish-square, W. 1.

THE CHOICE OF A MOTOR-CAR.

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THE choice of a car presents generally a difficult problem to the doctor. The type of practice, whether in town or country, and the state of the roads to be covered, whether the practice is in a flat or hilly district—these are among the many points which have to be carefully studied.

Initial Cost.

The price of the car is usually that which is considered first, and very often this must be arbitrarily decided without regard to other points involved. Even when but little capital is available, it must be remembered that to pay a good price may, for various reasons, be in the end more profitable than to buy a very cheap car, and with the deferred payment system described below it is not necessary to produce all the purchase money at once. Providing that the car selected is of sound workmanship and good repute, it will be found that the yearly depreciation is much lower in a more expensive car than in one of cheaper quality.

Depreciation.—The question of depreciation has some bearing on the type of body chosen. At the present time, owing to trend of fashion, the car with the best second-hand selling value is the saloon, and this appears likely to continue for some little time. Generally speaking, particularly in the larger type of car, the three-quarter landaulette, and especially the "all-enclosed" pattern, have extraordinary good second-hand value for many reasons. This car can be owner-driven and has a further market in that it can be used eventually for private hire work; it lasts considerably longer, and without undue rattle, than the coach-built "all-weather" or "cabriolet" type, which runs the saloon so closely in favour.

If a good car of the touring body type is bought with the intention to keep it during its lifetime, which should be at least 10 years, only 10 per cent. for depreciation need be allowed, as the car after that period will always bring some price. If, however, it is only intended to keep it for a few years, 20 per cent. will have to be allowed for the first year. On a car which costs approximately £500 there is a depreciation of some 20 per cent. each four years of its life, whereas a cheap car would depreciate very much more the first year. This applies particularly to American cars, which have to be depreciated at least 10 per cent. per annum more than the average British car.

American and British Cars: The McKenna Duties.

Owing to the larger horse-power of American cars in relation to their seating capacity and weight, they naturally use more petrol and oil, and are consequently more expensive to run than the smaller engined British car. The average small car up to 11 h.p. should do normally approximately 34 miles per gallon, but in the case of medical men stops are so frequent that petrol consumption cannot be reckoned on normal lines; and therefore I would not unduly stress this point as a factor in the choice of a car, but would rather consider the question on the lines set forth below. The price of petrol is, anyhow, so low that a few miles per gallon one way or the other is not very vital. Naturally, if a comparatively large car is decided on it must be realised at the outset that the costs of running will be considerably increased, particularly in the direction of licence and insurance, which are two of the heaviest dead charges that come against upkeep. There may be other factors to be considered, whose weight is not easy to assess, in connexion with the class of practice hoped for. A well-appointed car, larger and more luxurious in fittings than is really required, may be an asset to a practitioner in a fashionable neighbourhood, where it could only be an incubus to a man with a large panel practice or whose patients belong chiefly to the middle classes. Young consultants may be wise to spend more as initial outlay and should disregard small differences of running costs, whereas the general practitioner whose car will have continued hard use will not need a car with a large engine unless his work is scattered in a mountainous area. For the low speed and constant stopping involved in a morning round a car with from 10–15 h.p. will serve admirably, and for this class of work it is hardly worth while having a six-cylinder car of 20–40 h.p.

The position created by the proposed removal of the McKenna duties on August 1st has now been regularised, and no advantage can be looked for by delaying the purchase of a car until after that date. Prices have been settled on one or other of the following bases: (*a*) By the definite reduction and publication of the new prices; (*b*) by a guarantee to cover a drop in price between now and August 1st; (*c*) by an arrangement whereby cars can be purchased now at an agreed price and collected from bond on August 1st. These three clauses cover all foreign cars. In regard to the larger question of the British-made car, no reduction need be looked for; owing to reduced production prices are much more likely to be increased. Incidentally some misconception has been apparent in regard to the effect on retail prices of the removal of the McKenna duties; it was anticipated by the public that 33⅓ per cent. would be taken off the list price of the car, but probably the most that has been given is 10 per cent. It is permissible to point out that the duty of 33⅓ per cent. is taken off the actual manufacturing costs of the article in the country of its origin, whereas freights and costs of handling to this country were not affected. This explains the difference between the concession given by the manufacturers and the percentage of the tax removed.

Deferred Payments.

The deferred payment system can be recommended to those who do not feel disposed to release securities but prefer to pay for a car out of income. There are many forms of this system, which involve an increase of from 2½ per cent. to 4 per cent. on the original cost of the car with a 25 per cent. deposit or a 50 per cent. deposit, and the balance at 5 per cent. per annum spread over any time up to two years and may be payable by either monthly or quarterly instalments. No capital security for the purchase price is demanded, inquiry being addressed to the purchaser's bank merely to ensure that he is "good for" the monthly or quarterly sum payable. Providing a reasonable and honest firm is dealt with no trouble is likely to arise. On the other hand, it should be remembered that all payments due, whether monthly or quarterly, should be adhered to. If they are not, the car could be claimed back with the consequent loss to the purchaser of the whole of his deposits. In passing, it might be said that no reputable firm would insist on the strict letter of the law, but it is essential for the purchaser to bear this point in mind.

Income-tax deductions are allowed on some part of the instalments paid when the car is purchased on the deferred payment system. Each instalment must be split up for the purpose of income-tax into two portions, one portion being the amount estimated as a payment for the hire of the car until it becomes the property of the purchaser, and the other portion being the amount paid towards the purchase price. The best practice is to add up the total amount of all the instalments payable, and to deduct from this total the net cash price at which the car could have been bought outright. The difference between the two sums is the total amount attributable to hire, and it should be then split up and spread over the number of years during which the agreement is current.

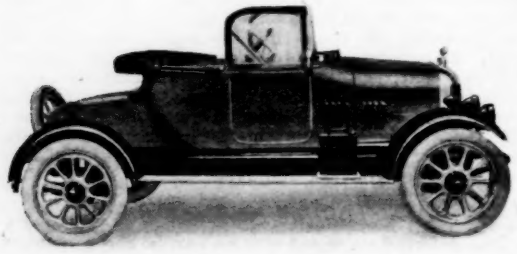
The annual amount thus ascertained *can be deducted* as a professional expense. Depreciation and a further deduction for repairs are also allowed, the amount being fixed by the income-tax authorities. The other portion of the instalments—i.e., those portions attributable to payment of the *purchase price*, are *not* allowed as a deduction from the profits.

The £200 Limit.

Motor Cycles.—The young energetic medical man may seriously consider the purchase of a good motor-cycle in place of a car. This is unlikely to be a wise investment, unless his work is carried on in a laboratory or an office and he requires a conveyance merely for purposes of recreation. For those in general practice the discomfort of a round in wet weather on a motor-cycle is intense, and, moreover, it is inadvisable to present oneself at a patient's house in mud-stained overalls. Again, even the most hardy nerves are likely to be upset in time by the excessive vibration which is experienced, and which one does not get on a car, however small.

Three-Wheel Type.—The three-wheel type of vehicle is becoming obsolete; from the point of view of a town practice it is entirely unsuitable owing to a difficulty in starting and a distinct tendency to skid. There would be no advantage gained by a purchase of this type of vehicle, as running costs can be considered practically equal to those of a small car.

FIG. 1.



11·9 h.p. Morris-Cowley two-seater. Price £198. With side-curtains in use independently as side-screens.

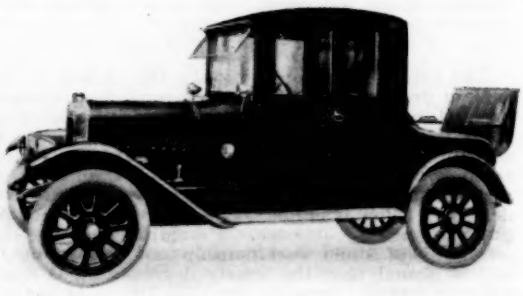
If existing garage arrangements will not permit of any other form of vehicle than the three-wheel, we would rather be inclined to extend the garage accommodation, if in any way possible, to take a small four-wheeler.

The Small Car.—Some misconception is apparent amongst the average car buyers that because a small car may be cheap or low in price that it is necessarily no good. This is a complete fallacy. There are some small cars on the market which are perfectly reliable and will give good service to their owners for many years, always providing that due regard is given to the district in which they are likely to operate; for instance, it would not be good policy to purchase a 7 h.p. Austin, 7 h.p. Jowett, or 8 h.p. Rover for some of the wild and hilly moor practices in Yorkshire, although these would be perfectly suitable for the average town or country practice. A car suitable for the very rough, hilly country would be the Trojan or a Ford, although the latter is somewhat expensive in upkeep. At the same time it will give good service and stand a vast amount of rough usage. Among the sound cars obtainable for £200 or under are the Morris Cowley 11·9 h.p., the Clyno 11 h.p., and the Singer 10 h.p.

The £400 Limit; Higher-Priced Cars.

Cars between £200 and £400 are of a heavier type. Within reason, where an intending purchaser has the larger sum to spend, it is preferable to buy the better car for many reasons. It is more strongly built, the body-work is better, accessories more substantial, larger tyres are provided in relation to the horse-power. Grease gun lubrication, an essential point where too much time is not available for attending to the car, is also provided as a rule, and more power. The Calthorpe, 10 h.p. Calcott, 11.4 h.p. Citroën, Renault, Morris-Oxford, and 11 h.p. Standard are all sound examples of this type and may be relied upon to give good and efficient service for a number of years providing that ordinary care is given.

FIG. 2.



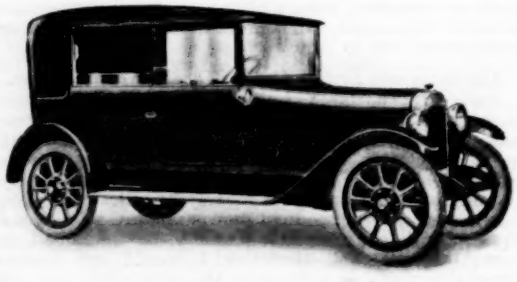
10–15 h.p. Calthorpe two-seater coupé. Price £350.

The choice of a car between £400 and £700 is not difficult. Such types as the 12 h.p. Austin; 14 h.p. Sunbeam, 14/40 h.p. Vauxhall, 15 h.p. Wolseley, 10/15 h.p. Fiat, 12 h.p. Rover, 14 h.p. Standard at once present themselves. Any of these can be confidently recommended, particularly on long-distance practices, or where a fairly large body is required for town use.

The Choice of Body.

The type of body preferred is largely a matter of individual taste. Generally speaking, for country work the best is a touring type (Fig. 1) with all-weather equipment. There are several excellent types on the market, and when completely closed the car is quite wind- and water-proof. For town work, some form of closed car is preferable—that is, a coupé (Fig. 2), all-weather (Fig. 3), or saloon (Fig. 4); this type of body adds slightly to the running cost, but not unduly so, owing to the fact that a comparatively slow pace has to be maintained in towns; it may safely be reckoned that town running

FIG. 3.



12 h.p. Austin "Harley" all-weather. Price £525.

costs at least 20 per cent. more than country. If a car is purchased with the all-weather type of body, it is essential that one should be selected with what is termed a steel head. Such a type is represented by the "Auster" or "Gwynne" head, in which practically no woodwork is used at all, and gives an extremely light body and the full effect of either an open touring car or the completely enclosed type. Providing this type is selected no trouble should be experienced with it for some years. But,

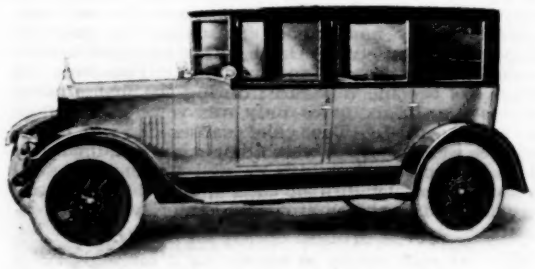
on the other hand, the disadvantages of the wooden pillar type cannot be too strongly emphasised.

Special Points about the Chassis.

Undersized tyres should be avoided at all costs for a number of reasons. If these are on the small side intense vibration will be felt throughout the car even on a fairly good road, and their life is short. An oversize should be fitted where roads are not good, or preferably, the new balloon type (Fig. 5), which on some makes of cars are fitted without extra cost. Much controversy has arisen over the question of these particular tyres, which are made by Dunlop, Michelin, and other well-known firms, but in my opinion the advantages outweigh the disadvantages, in that one gets freedom from vibration and slow rolling effect over very bad roads, with consequent reduction of undue strains on the chassis. On the other hand, there is a slight slowing of speed and steering is a little harder on sharp corners. In the course of a few months it will be possible to obtain replacements of these tyres in practically any town in the British Isles, so that no one need fear being stranded and unable to obtain a replacement. It may be taken as a general rule that cars are certainly not over-tyred, and practically any make will stand an oversize.

Frame.—Special attention should be paid to the frame of the chassis. This should be of generous

FIG. 4.



14 h.p. Standard "Kensington" three-door saloon. Price £450.

dimensions, and for the novice can most easily be noticed by comparison. It should always be remembered that weight does not necessarily mean strength, and where a chassis is comparatively of very light construction the advice should be sought of a competent engineer or firm of repute. The Ford is quite a good example of a strong car of light construction. It is unwise to select a chassis with very low ground clearance—i.e., the distance from the lowest point of the chassis, which may either be the front axle or the bottom of the axle casing, should not be much less than 8 in. to 9 in., otherwise on rough roads or deep ruts damage may be done to the underparts of the chassis, involving heavy expenses in repairs.

Accessibility of Parts.—General accessibility is essential, particularly in the case of the necessary greasers for various shackle pins on springs, brake-rocker, arms, &c., and the average up-to-date chassis is fitted with what is known as the Enots grease gun system (Fig. 6), which, by a turn of the wrist, can be fully charged without messiness.

Wheelbase.—Most cars have two wheelbases, the long and the short. The long is usually used for covered bodies, and the short for two or four seaters. There is little difference in the turning circle capabilities of either chassis on cars up to 15 h.p., but beyond that the long wheelbase has considerably extra weight, heavier running costs, and perhaps takes much wider space to turn in. Generally speaking, the long wheelbase chassis skids less than the short one.

Four Wheel Brakes.—These are a distinct advantage if they are or can be fitted to the particular model under consideration. They make for fast driving, and even on very greasy roads are quite safe. Cars can be pulled up at 40 miles per hour with all brakes on without a semblance of a skid.

Springs.—The only test of good springing is a ride in the car with the particular type of body that is being considered. What is termed hard springing can, of course, be considerably reduced by taking

FIG. 5.

The ordinary tyre (left) made by the Associated Rubber Manufacturers, Ltd., compared with their balloon low-pressure tyre (right).

out one leaf from the back springs or fitting some form of rebound damper. These vary in price from a few shillings up to £15, according to the size of the car. They are quite effective and should invariably be fitted for bad or difficult country. Certain types of the cheaper priced cars are fitted with these as standard—for example, the Citroën.

Transmission.—The accepted practice of to-day is to have fabric universal joints fitted in place of the older type of metal, and for several reasons: cheapness of replacement, absence of noise, no lubrication required, and increased flexibility when the drive is taken up, with consequent reduction of undue stresses on the engine and back axle.

Lighting and Starting Sets.

There are many types of lighting and starting sets now on the market which are simple and reliable, always providing that average attention is given them. It is essential that every doctor should have a self-starter fitted to his car. Modern self-starters are quite reliable, but they have one very vital point which the average owner gives small consideration to—that is, the battery. This is the essential part of the outfit since all current must come through it. It is also the most expensive part, and unless the plates inside are kept covered with acid or distilled water,

FIG. 6.

Enots flexible grease gun. The smaller figures show connector valves, which replace the usual greasers.

buckled plates may result, which may cost anything from £4 to £12 to replace. If the dynamo of a modern car does not charge properly, it may be due to the slipping of the belt which drives it. If the dynamo is gear-driven and does not charge at low speeds, it should be shown to an expert. Formerly, in some small cars practically no current was generated at all at slow speeds, say at 12 miles per hour, but this may be considered a thing of the past. Whilst the car is running and the charging switch is on, the battery is being constantly filled, and when fully

charged the dynamo automatically cuts itself out, so that no damage can be done to the battery itself. In connexion with the efficiency of self-starters, I would point out that when starting an engine on a very cold morning it is quite useless to turn on the engine switch and press the starter button; 99 times out of 100 there is no result, and it will take about six to eight hours to make the current used during every minute that the starter button is pressed. An obvious duty the first thing in the morning is to make certain that all is ready for the electric current—that is, petrol turned on, petrol in the carburettor, air intake or inlet closed, throttle slightly open, and engine switch turned on. When these things are seen to the engine should be given two or three turns by hand before using the starter. If this is done no one need fear to go at any time in the night and find that he cannot get any light or power for starting through his accumulator having run down.

General Points for the Prospective Owner.

The cost of running a car is often exaggerated both ways; some say the expense of motoring is out of all reason, and others underestimate the cost, claiming excessively low petrol consumption and impossible life for their tyres. To arrive at a year's running cost is, of course, somewhat difficult, as luck enters into the cost to a certain degree. If the owner looks after and drives his own car, it depends largely on his knowledge of the car. If he knows sufficient and has time to carry out minor repairs, his bills will be considerably reduced. Garage is a heavy item, and difficult to obtain in towns for less than £25 to £30 per annum, and it is therefore advisable, if the necessary ground is attached to the house, for the owner to have a simple garage erected, which can be purchased from £15 upwards. In this way considerable saving can be effected after the first year.

Insurance is always advisable, owing to the danger of third party claims, and we strongly advise that a car should not be taken out until it is covered.

Registration is a heavy item, and at the present time there appears to be no hope of its being altered to a tax on petrol which, from the car-owners' point of view, would seem the most equitable method.

Chauffeurs.—If it is decided to keep a chauffeur, a careful selection will well repay the owner. It must not be considered that a chauffeur is essential. The amount of time taken to keep the outside of a car in good appearance depends to a surprising extent on its colour. Grey, for instance, requires little washing, showing little dust, and can be roughly washed, whereas blue will probably take three times the amount of work to keep it in the same condition. It has been wisely said that a doctor's car should not be blood-coloured, nor should it be shaped or painted like a hearse. If the type of lamps and equipment is studied—i.e., black plated instead of nickel—this will reduce the work to practically nil. With ordinary care and attention few repairs should be required for thousands of miles. Small adjustments can be made by the owner himself if he has studied the many excellent handbooks which are issued with each car and should present no difficulty to the average owner. In cases of electrical difficulty, it is always advisable to call in a competent firm. Many chauffeurs, of course, take the utmost pride in, and care of, cars in their charge. A good man who knows his work can save his employer many pounds per annum by doing the running adjustments or small repairs that crop up from time to time. Their wages vary very considerably in different parts of the country so that no standard figure is suggested. Giving full power to chauffeurs to order spares, &c., is not advisable as this tends to make them careless.

Second-hand Cars.—This is a difficult matter for a prospective owner to tackle, whether he be a novice or experienced motorist. It may be taken that it is a highly specialised branch, and he should place himself in the hands of a reputable firm who will advise and report on the actual car both as to price and mechanical condition.

It is difficult to deal with the many small details which crop up in connexion with the purchase of a car. If the wrong type is chosen it will lead to much disappointment and expense to the unfortunate owner. It is advisable to seek the help of a specialist who can be relied on to give unbiased advice.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Suicide Statistics.

ACCORDING to the statistical records of the Berlin police 267 cases of suicide have been registered in the first quarter of this year, the figures for the corresponding period in the last nine years being as follows: in 1915, 90; in 1916, 111; in 1917, 127; in 1918, 129; in 1919, 97; in 1920, 141; in 1921, 191; in 1922, 186; in 1923, 256. It will be seen that with the exception of 1919, the first year when there was some hope for a better future after the end of the war, the number of suicides has maintained an increase and is now nearly three times greater than in 1915. The methods of suicide have undergone certain changes in the course of time. Formerly poisoning with corrosive sublimate, with carbolic acid, lysoform, or arsenic was preferred, but the strict regulations on the sale of drugs made it more difficult to purchase such poisons, so that other means were adopted. In the majority of cases the act was committed by hanging or poisoning by gas, but many shot themselves. On the other hand, all women suicides had recourse to drowning. Poisoning by drugs has become very rare; during the first quarter of this year in six cases only was veronal, morphia, or arsenic used. The chief causes to which the suicides were ascribed were: financial ruin, incurable disease, unhappy love affairs, and melancholy. All classes of society furnish their quota, but domestic servants and workmen are in the majority.

A New Medical Society for Sports.

The interest shown in sports by a large party of the medical profession has led to the suggestion of forming a medical society for sports—not a society of medical footballers, cricketers, or tennis-players, but an association for the study of hygienic and physiological questions connected with sports. The formation of the society is backed by the large sporting and gymnastic clubs who wish to be advised as to methods of training from a medical standpoint and to have their members under medical control. Among the initiators of the scheme are several well-known professors of Berlin University, including Dr. Bier, professor of surgery, Dr. Kraus, professor of clinical medicine, Dr. Rubner, professor of hygiene, and Prof. Hueppe, formerly of Prague. A meeting has been called at which it is hoped to found the new society.

Nervousness in Children.

The German Society for School Hygiene at their annual meeting held this year in Hamburg discussed nervousness in school-children. The President, Prof. Czerny, of Berlin, stated that congenital neuropathy was not more frequent now than formerly, the increase of neurasthenia being due to external causes of which the influence of the school played a large part. Dr. Flachs, of Dresden, explained that neuropathic school-children could be divided into four types: the timid, the excited, the shy, and the apathetic. School medical officers often discover that an alleged neurasthenia is only a symptom of an organic trouble, such as epilepsy or rickets. He deprecated the exaggerated tenderness of mothers who question the children constantly on subjective symptoms, take the temperature without reason, and so spoil the child's character. "But," added Dr. Flachs, "children suffer from the bad financial condition of the parents. Sometimes they sleep too little because

they must help to work. Again, the parents indulge in amusements and take the children with them. Visits to cinemas are particularly bad for children, because of the flickering and dazzle of the picture. The noise of street traffic is also very injurious. Sports are the best means of hardening the child and of strengthening its self-confidence." An argument for the Medical Society for Sports is thus furnished.

Overcrowding in the Medical Profession.

The Leipziger Verband has recently issued a further urgent warning[1] against the study of medicine, because of the overcrowding of the medical profession. They state that one of the reasons of overcrowding is that the army and navy medical corps respectively have been almost totally disbanded and consequently many members have entered civil practice and have obtained State medical appointments which were formerly the privilege of civil doctors. Another reason is that owing to the loss of the colonies and other parts of German territories many medical men from these parts have settled in the remainder of Germany. Also, the older medical men who in former times would have retired from practice at a certain age are now, through bad financial conditions, compelled to practise as long as their health permits or even until death. The Verband reminds intending medical students of the difficulties of club practice since the free choice system is in danger, so that possibly in future only a portion of the profession will have the opportunity of practising under the insurance laws. The Verband states that for many years there will be no vacancy for assistantships in hospitals and university clinics. Stress is also laid on the fact that the training of medical students is of longer duration and thus more expensive than that for other academical profession. The former warnings have already had the effect of causing a decrease in the number of medical students, but the supply still exceeds the demand. According to the *Münchener Medizinische Wochenschrift*, the number of medical students in Germany during the winter session, 1923–24, was as follows: Berlin, 1967; Munich, 1394; Leipzig, 750; Würzburg, 640; Freiburg, 588; Breslau, 572; Heidelberg, 555; Jena, 517; Bonn, 506; Kiel, 402; Marburg, 353; Frankfurt, 337; Halle, 329; Tübingen, 308; Göttingen, 307; Königsberg, 295; Greifswald, 256; Rostock, 250; Hamburg, 239; Giessen, 226; Erlangen, 209; Cologne, 168; Münster, 167. Total, 11,335.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Gastroscopy.

GASTROSCOPY has been comparatively little studied in France, and the only systematic research that was carried out by this method was done by Moure. But it is interesting to note that when Kussmal in 1886 introduced a rigid tube into the stomach for the first time he employed an endoscope which had been purchased in Paris. Since that period a great number of instruments have been invented, the best known being those of Elsner, Schindler, and Sternberg. Dr. Benschulde, physician to the hospital of St. Antoine, recently demonstrated before the Academy of Medicine a new gastroscope which he invented and which obviates some of the defects of earlier instruments. It consists of three parts: First, a tube containing the optical apparatus; secondly, a head piece, which carries a lamp and which is furnished with a guiding cannula; thirdly, a strip of steel terminating in a metal ball. In the first place the metal strip, which acts as a guiding thread, is introduced and then the gastroscope itself is slid over this strip, which passes through the cannula in the head piece. Examination is carried out in the knee-elbow position. This position has the advantage of enabling liquids to flow away from the mouth, bringing the stomach to the eye of the observer, and of freeing the cardiac end. In this position the liver falls forward against the abdominal wall and separates it from the stomach and the loops of the intestine. The view which can be obtained by the gastroscope is so clear that the greatest hope can be placed in the future of gastric endoscopy. This method, in spite of difficulties in locating points in the stomach, is one which can be of great service in the early diagnosis of cancer ulcer, rare tumours, and in certain forms of gastritis.

[1] THE LANCET, March 29th, 1924, 672.

A Medical Club.

There are in Paris many clubs for professional and military men, but doctors possess no building where they can meet and discuss medical matters. For more than 50 years there has been a question of forming such a club, but several tentative efforts to found one have come to naught. The Association Générale de Médecins de France has taken up the idea again and has formed a committee to look into the matter. As the result of a conference held two years ago by Dr. Charles Lævassort in the large theatre of the Faculty of Medicine, Dr. H. Forestier of Aix les Bains gave an account of similar organisations which existed in Copenhagen, in Stockholm, and in London, which made us regret all the more that we had no such institution. At the moment it seems as if the scheme might come to fruition. Dr. A. Thiery, president of the study committee, has made an appeal to the French Medical Corps, with the object of acquiring the old house of the University des Annales in the Place Saint Georges, which is at present vacant. It is a very fine building with a large entrance hall and many large rooms, of which one could be used as a demonstration theatre to seat 600 people. The other rooms could be used as reception rooms, lecture rooms, writing rooms, &c., or as the headquarters of various scientific and professional societies. In this way a central club might be formed, and on the premises a permanent exhibition might be held of the products of medical commercial houses. The addition of a restaurant would make the club a pleasant place in which Parisian doctors might entertain their colleagues from the provinces.

Social Aid for Abnormal Children.

The Society of Pediatrics recently held a long discussion on the question of social help for abnormal children. It was decided that the instruction of these children should not merely be optional, but ought to be enforced by law. In order to carry this into effect, it would be necessary to institute supplementary classes and to extend the system of boarding out weak-minded children who showed no moral perversity. The system would be worked from organised centres, and the children would be under the care of a doctor and a visiting nurse. It was suggested that in hospitals for children a neuro-psychiatric clinic ought to be established, the clinic to be conducted by specialists with the object of diagnosing and treating and placing abnormal children. The staff should further include a lady visitor. This department would be attached to the hospital, and would have at its disposal a certain number of beds for observation and necessary treatment. It should also work in close association with educational and boarding-out establishments, asylums, and private homes, &c.

Treatment of Delinquents in the Penal Code.

The recent congress of forensic medicine, which was held in Paris, requested the French Penal administration to institute in the Penal Code such changes as would be necessary for the physical and moral treatment and social re-education of prisoners. The congress passed a resolution in favour of developing by all possible means psychiatric and mental prophylaxis and hygiene.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the principal statistics for 1923 of two county boroughs and two boroughs, the annual health reports of which we have received :—

Name of borough.	Estimated mid-year population (R.G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Croydon C.B. .	193,400	17·4	10·4	1·0	1·3	1·7	22	52	3·0
Southport C.B.	72,410	13·8	13·5	0·9	1·3	2·6	34	65	2·0
Swindon B. ..	55,980	17·8	9·3	1·2	1·2	1·2	32	52	0·0
Taunton B. ..	24,500	15·6	10·5	1·1	1·2	1·6	26	57	2·6

Croydon.

Dr. H. P. Newsholme compares the distribution of families at the 1921 census with that in 1911. The size of the family in 1911 was 4·28, in 1921 4·03. In 1921 19·2 per cent. of the families lived in one, two, or three rooms, as against 15·8 in 1911. The percentage of persons living in more than two to a room was 4·7 in 1921 and 4·3 in 1911. As regards constitution of the population there is at the last census a lower proportion of children under 15 owing to the declining birth-rate and a higher proportion of persons over 45, owing to the decreasing death-rate. The borough sanatorium, Cheam, is to be enlarged from 50 to 85 beds (40 for Croydon, 40 for Surrey county, and 5 for Kent county) and to be used mainly for the treatment of medium and advanced cases of pulmonary tuberculosis. The establishment of an open-air school would free beds in other institutions at present used for glandular, &c., tuberculosis for the more urgent needs of children suffering from surgical tuberculosis. Sixteen shelters are in regular use. After-care work is the least developed side of the tuberculosis scheme.

An analysis is given of the variations in infant and child mortality during 1901–21. Infant mortality has decreased to 62 per cent. of the rate of 1901–05, child mortality at the age-period 1–5 years to 66 per cent., but the mortality at the period of 5 to 15 years has remained practically constant, possibly because during this healthy period it approaches the minimum attainable. During infancy there has been no notable decrease in the fatality of bronchitis, pneumonia, premature birth, atrophy, debility, and marasmus. During early childhood there has been no notable improvement in the mortality from bronchitis, pneumonia, and measles. Midwives attend about 50 per cent. of the births, and in 1923 sent for medical help in rather less than 10 per cent. of their cases. The corporation retain 15 beds in St. Mary's (Lying-in) Hostel conducted by the Croydon Mothers' and Infants' Welfare Association, in return for an annual subsidy of £1800. Towards the end of the year it was decided to test the following allocation of the 17 beds at the hostel: 11 for normal cases, 3 for complications, 2 for emergencies, and 1 bed for isolation. Abnormal cases are attended by a rota of practitioners, each pair on duty for a week at a time, one on "first call" and the other on "second call." The usual fee paid by the Association to the practitioner is £2 per case. Arrangements are made for the six or seven pupil midwives in training at the hostel to spend the last month of their course with a Croydon midwife, with a view to gaining experience of district work. The V.D. clinic is being more used and appreciated by women patients. There is scope for more educational work in Croydon, says Dr. Newsholme, with regard to these diseases. Croydon has its housing difficulties. "It is the rule rather than the exception for the poorer class of house to be occupied by two or more families." The new houses erected during 1923 numbered 963, mostly villas for sale on completion. No municipal or other houses were completed with State assistance during 1923, but 533 houses were approved for subsidy during 1923 and up to April, 1924.

In his report as school medical officer Dr. Newsholme mentions his proposal for a rearrangement of nursing districts, by which each health visitor or nurse will be responsible for all varieties of public health nursing work within her area, including school nursing, home visiting, and centre work in connexion with maternity and child welfare, and tuberculosis visiting. Dental treatment is very incomplete at present, Only the 6–7 year-old group are inspected and of these not half accept treatment, and there is no arrangement for reinspection after 7 years of age. Dr. Newsholme submits an important scheme for extension, which involves an increase in expenditure from £700 in 1923 to about £2000 in 1926, a progressive increase in the dental staff (at present three part-time dentists conduct eight sessions weekly) to two whole-time dentists, and a corresponding increase in the nursing and clerical staff, the fuller use of the present dental clinic, and the provision, later on, of a second dental clinic, &c. By these provisions annual reinspection will be extended year by year; in due course, dental inspection will be begun at 5 years; and treatment facilities will be provided for mothers and children under 5. At the same time steps will be taken to educate the parents as to the urgency of the need for dental treatment.

A remarkably large number of cases of spinal curvature were found during routine medical inspection; 144 cases, or 2 per cent., of the children seen were referred for treatment. This prevalence was associated in some instances with the use of obsolete desks, and arrangements have been made for their steady replacement by desks of a modern type. Miss May Appleton, the organiser of physical training for girls, submits an interesting report on her work. Dr. Newsholme would welcome a similar appointment for the organisation of physical training for the boys.

Southport.

Dr. George C. Barnes appeals to the medical profession for a more careful observance of the provisions of the various Acts requiring notification. A number of births and cases of pneumonia escape notification, and about 60 per cent. of the cases of pulmonary tuberculosis are only notified in stage 3. Of the institutions subsidised by the corporation, the All Saints' creche has been closed on account of falling attendance, and the Southport Babies' Home is said to be not altogether suitable for its purpose. In the case of the latter, Dr. Barnes discusses "boarding-out" as an alternative, but thinks it would be difficult to get foster-mothers for infants. We believe, however, that the United Services Fund (Secretary, 29, Cromwell-road, S.W. 7) is able, by a system of careful selection of foster-mothers and adequate payments, to board out children of all ages successfully in country villages.

Swindon.

Dr. Dunstan Brewer reports that Swindon was exceptional in not having to face conditions of severe poverty and unemployment during 1923. The reconstruction of the sewage works is nearing completion. The first section of the storm-water scheme is almost completed, and the whole system designed to relieve the flooding of the lower part of the town will be finished ere long. The work of the storm-water scheme has abolished the long-standing nuisance

caused by the canal. The nuisances caused by the condition of the public conveniences still remain to be tackled. The water shortage of the northern part of the town has been relieved by the new water main, completed in 1923. The house shortage is still acute, and "until houses in comparatively large numbers which can be *rented* are available the problem of overcrowding in Swindon is insoluble." Throughout his report Dr. Brewer continually refers to the lack of general hospital accommodation commensurate with the needs of the town, and in his conclusion he gives this and the artificial feeding of infants as the two outstanding obstacles to public health progress.

Taunton.

Dr. John Allen says, "The lack of houses of any kind is the most serious defect affecting the health of the people, while at least 700 of those in occupation are without ventilation and are quite unfit for use as dwelling-houses." Nevertheless "Health Week" was observed very actively by means of lectures, sermons, &c., and the mayor gave a prize for the best essay by an elementary school-child on "What I must do to keep healthy and fit." Dr. Allen includes in his report extracts from the Ministry's circular on cancer. In September the infant welfare centre was moved into much more convenient premises. Various brands of dried milk are stocked at the centre and sold to the mothers at cost price. Dr. Allen's opinion on its value is no uncertain one. He says, dried milk "is infinitely cleaner and has a more stable cream content than ordinary milk, and is more than equivalent to certified milk." The hours of sunshine in Taunton during 1923 were 1508·5.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 21ST, 1924.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 58; scarlet fever, 1348; diphtheria, 651; enteric fever, 133 (as against 83 of the previous week); pneumonia, 708 (as against 588 of the previous week); puerperal fever, 34; cerebro-spinal fever, 9; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 161 (as against 171 of the previous week); dysentery, 6; ophthalmia neonatorum, 144 (as against 122 of the previous week). There were no cases of cholera, plague, or typhus fever notified during the week. Of the 58 cases of small-pox, 28 were notified from the county of Derby (Derby 4, Chesterfield 14, Swadlincote District 5, Chesterfield R.D. 3); 7 from Northumberland (Ashington); 6 from the county of Nottingham (Nottingham, 1, Stapleford 2); and 16 from the North Riding of Yorkshire (Middlesbrough 15). Of the cases of encephalitis lethargica 25 were reported from the county of London (Battersea 1, Bermondsey 1, Camberwell 1, Chelsea 1, Deptford 6, Finsbury 1, Hackney 1, Islington 2, Kensington 1, Lambeth 1, Poplar 1, St. Pancras 1, Shoreditch 1, Southwark 2, Stepney 3, Westminster, 1); 9 from the county of Durham (Sunderland 4, and Sunderland, R.D. 1); 5 from Essex (Walthamstow 4); 8 from the county of Gloucester (Bristol 5); 4 from Kent (Rochester 2), 22 from Lancashire (Blackburn 4, Liverpool 3, Manchester 5, Warrington 2, Accrington 2); 9 from Middlesex (Heston and Isleworth 2, Tottenham 3); 4 from Northumberland (Newcastle 3); 5 from the county of Stafford; 15 from the county of Warwick (Birmingham 9); and 12 from the West Riding of Yorks (Bradford 2, Sheffield 7).

Deaths.—In the aggregate of great towns, the deaths from influenza remained at 25, the figure for last week. The deaths from diphtheria in London fell from 14 to 8 and increased from 27 to 29 in the great towns.

HARTLEY HOSPITAL, COLNE.—This hospital, the gift of the late Sir William Hartley, of Southport, was opened on June 21st by the daughter of the donor. The total cost is estimated at £100,000. Gifts amounting to £10,000 towards the establishment of an endowment fund have been collected.

MEMORIAL TO THE LATE SIR FRANCIS FARMER.—On June 25th Mr. Asquith unveiled, at the London Hospital Medical College, a memorial to the late Sir Francis Farmer, L.D.S. R.C.S., who at the time of his death was consulting dental surgeon to the London Hospital. After paying for the tablet some £570 remain in hand from the subscriptions collected, and it is intended to use the money to establish an endowment scholarship, which will bear Sir Francis Farmer's name.

Correspondence.

"Audi alteram partem."

VOMITING AS A PATHOLOGICAL FORCE.

To the Editor of THE LANCET.

SIR,—The interesting paper by Dr. de Wesselow on the Inorganic Constituents of the Blood, which appeared in THE LANCET of May 31st (p. 1099), contains statements further supporting the view that vomiting is a pathological force. All the world recognises that vomiting at times is beneficial. Vomiting after feasts, from ancient times, has been practised—a distinguished surgeon, but a few years deceased, after attending banquets, as a routine used the stomach-tube. By unloading the overladen stomach we relieve not only that organ, but all the digestive and assimilative apparatus of a work which is excessive and causes a strain on the organs concerned, and which therefore, if too frequent in occurrence, is deleterious. And "that the vomiting of uræmia may be regarded as constituting a protective mechanism" may be admitted. It rids the body of poisons, of toxins—i.e., of natural waste products (however so changed)—it acts just in the same way as the vomiting incidental to the ingestion of such a poison, for instance, as arsenic.

Whilst this is recognised, it is not yet known that vomiting, if persistent and coercive—and quite apart from the resulting relative starvation and dehydration—has pernicious effects. I cite such states as sea-sickness, the vomiting of pregnancy, of intestinal obstruction, of uræmia. Dr. de Wesselow, under his "Table III.—Nephritis," comprising ten cases, includes one of intestinal obstruction. Referring to this case, he says: "Early in the course of obstruction, the chloride is noticeably low and the bicarbonate somewhat above the normal level; the urea retention present in this patient is a constant feature of the severer types of obstruction, and is apparently the result of definite renal damage." He then goes on to consider the findings in a case of nephritis, in which observations at four successive times were made. He says: "In Case 3, vomiting ceased shortly after the second blood sample was examined, and at the time of the third observation (28 days after the second), a more normal distribution of the acid radicles of the plasma was present. The bicarbonate was now reduced in proportion to the phosphate accumulation, and the plasma chlorides had returned to a normal level. The cessation of vomiting was accompanied by an extremely rapid gain in weight, which may have represented the restoration of the chloride and water content of the body to a normal figure, since the water content is largely determined by the amount of chlorides present in the organism."

Thus, Dr. de Wesselow, if I understand him aright, believes that by the vomiting much chloride (as HCl) is lost; and that with cessation of the vomiting this loss ceases so that the tissue cells again take up water with an increase of weight. But vomiting has not only a chemical effect; it not only rids the body of the contents of the stomach and thus affects the blood, the tissue fluids, and presumably the tissue cells: it has a mechanical effect. By vomiting, not only is the stomach compressed, but also the other abdominal organs; the liver and kidneys, with the stomach, are the subject of an impaction, or of a series of impactions—i.e., of a compression, or of a series of compressions—suddenly arising and of considerable degree. It cannot be believed that such impactions can occur without staying even for the moment the blood flow through the organs, nor can it be believed that the frequent repetition of such act is without effect on these organs, and consequently without effect on the blood. The vomiting associated with arsenical poisoning, with intestinal obstruction, with pregnancy, and we may add with sea-sickness, all result in damage to the liver and

kidneys. It has been supposed that the impairment of the kidney in intestinal obstruction is due to a toxin absorbed from the obstructed gut. I have shown[1]—and according to one or two reviewers have made out a good case for my view—that the toxæmia of intestinal obstruction is not due to such a toxin, but to the effect of the persistent vomiting. We have only to consider the structure of the vascular system in the kidney and the dynamics of the blood-flow through this organ to see that undue compression of the organ must militate against its normal manner of functioning, and even to produce pathological changes. The cessation of the vomiting not only prevents further loss of water and of chlorides, it allows the blood-flow through the kidney (and through the liver) to continue undisturbed; and if the reparative powers of these viscera are normal, to cause a return to the normal state. A rapid gain in weight under such conditions is not surprising; to attribute it simply to a retention of chlorides and water is admittedly an assumption. Such conception takes no account of the relationship of the kidney function with protein—muscular—metabolism. It leaves aside altogether the question of the internal secretion of the kidney—thought by some to affect the musculature and thus to be related to body-weight—and which we may with reason suppose suffers when the other functions of the organ have beome impaired. In short, a very important effect on the body of vomiting has been unconsidered, and until this question is settled progress cannot be made. I have urged before that man consists of so many pounds avoirdupois; that many of his vital acts are mechanically controlled. Man, in short, is a machine, in which the chemical reactions, as elsewhere in the universe, are subservient to physical conditions. To shut our eyes to the physical effects of vomiting on the body, and to see only in this act a chemical change, is to miss an essential point. It is clear the blood-flow through the viscera must be considered, and the effects of acts such as vomiting on this be determined.

I am, Sir, yours faithfully,

Rugby, June 15th, 1924. R. H. PARAMORE.

THE SCHICK TEST.

To the Editor of THE LANCET.

SIR,—May I comment on a few points in the valuable record of observations on the Schick test by Dr. C. B. Ker and Dr. J. McGarrity in your issue of May 31st. We agree with what Dr. Ker finds—i.e., that a "positive and pseudo" reactor can be immunised successfully so that he later becomes a "negative and pseudo" reactor. The mistake referred to in Dr. Ker's letter of June 28th has probably arisen from my careless use of the clumsy terms relating to these two classes of people. In laboratory jargon we speak of a "negative and pseudo" reactor as a "pseudo" reactor, and I have probably unintentionally misled Dr. Ker as to our opinion by saying that a "pseudo" reactor (meaning a "negative and pseudo" reactor) is immune and does not need prophylactic.

The authors quote laboratory work as showing that all antitoxin may have disappeared from the blood in 12 days. I should think this is an unusually short period, though we have recently obtained a clear positive Schick reaction in an adult who received a dose (probably 500 units) of antitoxin 14 days previously. We are at present engaged in examining the blood from a number of patients at various intervals after receipt of diphtheria antitoxin, and we find that the majority of these patients have a small but detectable amount of antitoxin in their blood four to five weeks after the injection of antitoxin. Most of these patients retained so little antitoxin that they would probably have given a positive Schick reaction. We think the laboratory evidence agrees with what Dr. Ker finds from his wide clinical experience—i.e., that a dose of antitoxin gives protection for three weeks. It would be interesting to know whether the nurse who gave a slight reaction on both arms and after being classed as negative developed diphtheria, had a severe or mild attack. We have records of three patients in four years' work who had certainly given a Schick negative reaction, and later on suffered from a sore-throat and yielded virulent K.L.B. in culture. All three patients showed very slight symptoms, and may justifiably be classed with what Dr. Harries calls "a transient tonsillitis associated with the presence of morphological diphtheria bacilli."

Dr. Ker and Dr. McGarrity did not find the reading at 24 hours accurate in a very high percentage of instances. The delay in the appearance of the reaction amongst their patients may be connected with the ill-health of the children. My colleague, Mr. Glenny, finds that in ill- or badly-nourished guinea-pigs the reactions are reduced in intensity and may be delayed. The children quoted in our papers were almost all healthy children, inmates of schools or institutions. We have not had many opportunities recently of making 24-hour readings on large numbers of children, but our evidence in the past year or two confirms the expectation derived from our earlier work that approximately 95 per cent. of *healthy* children will give over-night reactions that agree with later readings.

In view of Dr. Ker's experience, it is evident that further attention must be given to this important point in the future.

I am, Sir, yours faithfully,

R. A. O'BRIEN.

Wellcome Physiological Research Laboratories, Beckenham, June 30th, 1924.

[1] The Toxæmia of Acute Intestinal Obstruction; or Vomiting as a Pathological Force. London: H. K. Lewis and Co. 1923.

THE FORBES FRASER MEMORIAL FUND.

To the Editor of THE LANCET.

SIR,—In view of the generally expressed wish that there should be some lasting memorial to the life and work of the late Mr. Forbes Fraser, a small committee, with the Mayor of Bath as chairman, has been formed to consider how best to give effect to this widespread desire. The medical men on the committee include Dr. C. E. S. Flemming, Dr. F. G. Thomson, and Mr. W. G. Mumford. It is felt by the committee that whatever form the memorial takes it should be in some way connected with the recently opened hospital at Combe Park, the inception of which was mainly due to Mr. Forbes Fraser. Not only did the idea originate with him, but it was largely owing to his stimulating influence and untiring energy that the difficulties connected with the building and equipment of the hospital have eventually been overcome. In order to commemorate his work, the hospital committee have decided that the institution shall in future be known as the Forbes Fraser Hospital.

Owing to the limited funds available, it has been found impossible to provide the Forbes Fraser Hospital with certain very necessary equipment. One of the most pressing needs is the provision of a thoroughly well equipped X ray department. Mr. Fraser was himself urgently impressed with this need, and at the time of his illness was actually considering plans for its provision. It is felt by the committee that no fitter memorial to his memory could be devised than to provide the funds necessary to instal this department.

The total cost of the erection and equipment of an X ray department is estimated at from £2500 to £3000; donations may be sent to Mrs. A. L. Hope, Eagle House, Bathford, Somerset, or may be paid direct to the Forbes Fraser Memorial Fund, National Provincial Bank, High-street, Bath.

I am, Sir, yours faithfully,

A. L. HOPE,
Hon. Secretary and Treasurer, Forbes Fraser Memorial Fund.

June 28th, 1924.

SPINAL ANALGESIA.

To the Editor of THE LANCET.

SIR,—Mr. Holroyd Slater, in his paper on this subject in THE LANCET of June 21st, says with regard to disadvantages of this method of anæsthesia, "I know of none, provided the technique be correct, save the slight extra work which devolves on the surgeon." May I remind him of a complication which certainly is not common, but which I happen to have seen twice lately, and that is paralysis of one or other sixth cranial nerve. It is by no means a trivial complication, and the resulting diplopia is most confusing and distressing to the patient.

I am, Sir, yours faithfully,
R. FOSTER MOORE.

Harley-street, W., July 1st, 1924.

OSTEOPATHY IN ITS MEDICO-LEGAL ASPECTS: A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—In your report in THE LANCET of June 28th of the meeting of the Medico-Legal Society, at which Dr. Norman J. Macdonald read a paper on this subject, I am credited with certain remarks in the subsequent discussion of the paper. As a matter of fact, though I am a member of the Medico-Legal Society, I was not present at this particular meeting. As the remarks attributed to me by no means represent my views on the subject, I should be much obliged if you would publish this letter, disclaiming them.

I am, Sir, yours faithfully,
ARTHUR S. MORLEY.

Gordon-square, W.C., June 27th, 1924.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

To be Surg. Lts.: J. H. Laydon, J. J. O'Reilly, and J. J. A. O'Sullivan.

ROYAL NAVAL VOLUNTEER RESERVE.

T. W. Drummond, late Temp. Surg. Lt. R.N., to be Surg. Lt. R.N.V.R.

ROYAL ARMY MEDICAL CORPS.

Temp. Capts. H. H. Crickitt and R. B. Hunt (on account of ill-health) relinquish their commns. and retain the rank of Capt.

MILITIA.

Capt. A. E. B. Paul relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Capt. I. M. Pirrie (late R.A.M.C., Militia) to be Capt.

ROYAL AIR FORCE.

Flying Officer V. S. Ewing is promoted to the rank of Flight Lt.

DONATIONS AND BEQUESTS.—Following on the death of Mrs. Mellor the trustees under the will of the late Colonel John James Mellor, of Manchester, who was Member of Parliament for the Radcliffe-cum-Farnworth Division, have made a partial distribution of his charitable bequests, including £1000 each to the Manchester Royal Infirmary, Bury Infirmary, Christie Cancer Hospital, St. Mary's Hospitals for Women and Children, Manchester, and the Children's Hospital, Pendlebury, Manchester, to endow a "Mellor" bed in each institution; also £2500 to found a Mellor Nursing Fund for the provision of a nurse for Whitefield; £1000 to the existing Mellor Convalescent Fund; £1000 for Lytham Cottage Hospital; and £500 to the Manchester and District Surgical Aid Society.—The late Mr. Frederick William Smith, of Ramsgate, left by will £500 to the General Hospital, Monmouth, for a bed to be known as the "Maria Smith Bed," in memory of his mother. Part of the residue of the property he left to the Seamen's Infirmary, Ramsgate, on the death of his wife.

Medical News.

UNIVERSITY OF GLASGOW.—At the graduation ceremony on June 25th, degrees were conferred as follows:—

Hon. LL.D.—Sir Malcolm Watson (Senior District Surgeon, Federated Malay States Medical Service).

M.D. (With Honours).—David Campbell, M.A., B.Sc., M.B., Ch.B. (Thesis: Studies on (1) Rheumatoid Arthritis and its Treatment, with special reference to the use of Non-Specific Protein Reaction; (2) Ionic Medication.) Robert D. Gillespie, M.B., Ch.B. (Thesis: The Physiological Basis of Clinical Tests of Cardiac Efficiency.)—*In Absentia.*

D.Sc.—James H. Paul, M.A., B.Sc., M.B., Ch.B. (Thesis: Studies in Special Crustacean Physiology.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—As the result of the Primary Fellowship Examination held from June 10th to 18th, for which 100 candidates presented themselves, 31 were approved and 69 were rejected. The successful candidates were as follows:—

J. L. Armour, Liverpool; Alfreda Helen Baker, Belfast; H. Barbash, Cambridge and St. Bart.'s; G. M. F. Barnett, Otago and Middlesex; P. G. Bentlif, Cambridge and Middlesex; R. H. Boggon and A. Byrne-Quinn, St. Thomas's; F. A. Bryning, King's Coll. and St. Mary's; H. J. Burrows, Cambridge and St. Bart.'s; J. B. Crabtree, St. Bart.'s; J. L. Diggle, Melbourne and Middlesex; S. W. Drinkwater, Manchester; V. T. Ellwood, Oxford and St. Thomas's; E. S. Frischmann, Manchester and St. Mary's; R. A. Graff, Middlesex; W. A. Gray, Edinburgh and St. Mary's; P. Hack, Guy's; J. A. James, Sydney and Middlesex; R. P. S. Kelman, Otago; V. E. Lloyd, Guy's; E. E. Mackay, Melbourne and Middlesex; J. McMichael, Edinburgh and St. Bart.'s; D. S. Middleton, Edinburgh and St. Mary's; F. W. G. Nash, Middlesex; C. H. Osborn, Melbourne and Middlesex; C. L. Owen, Cambridge; A. M. Reid, Liverpool and Middlesex; J. Roberts, Liverpool; M. P. Susman, Sydney and Middlesex; S. N. Taylor, Manchester and St. Mary's; and C. I. Tuckett, St. Mary's and Middlesex.

ROYAL COLLEGE OF SURGEONS IN IRELAND: *Election of Examiners.*—At a meeting held on June 19th, Mr. Robert C. B. Maunsell, President, in the chair, the following were elected as examiners for the ensuing year:—

Court "A" (Conjoint Licence, Diploma in Public Health, and Preliminary).—Anatomy: Prof. E. J. Evatt. Surgery: Mr. L. G. Gunn and Prof. G. J. Johnston. Physiology and Histology: Prof. J. A. Scott. Pathology and Bacteriology: Prof. W. Boxwell. Midwifery and Gynæcology: Prof. E. H. Tweedy. Biology: Prof. MacD. Cosgrave. Ophthalmology: F. C. Crawley and R. D. Joyce. Chemistry and Physics: Prof. W. Caldwell. Chemistry and Physics, for Diploma in Public Health only: Prof. W. Caldwell and Dr. S. Young. Materia Medica, Pharmacy, and Therapeutics: Prof. R. J. Rowlette. Forensic Medicine and Public Health: Prof. V. M. Synge.

Court "B" (Fellowship, Licence in Dental Surgery).—Anatomy: Prof. E. J. Evatt and Dr. C. M. West. Surgery: Mr. A. Chance, Mr. L. G. Gunn, Prof. G. J. Johnston, and Mr. H. Stokes. Physiology and Histology: Prof. F. C. Purser and Prof. J. A. Scott. Pathology and Bacteriology: Prof. W. Boxwell and Prof. R. J. Rowlette. Chemistry and Physics: Prof. W. Caldwell and Dr. S. Young. Dental Surgery and Pathology: Mr. G. Sheppard and Mr. D. Doolin. Mechanical Dentistry: Mr. D. L. Rogers and Mr. J. Cockburn.

AUGUSTUS AND ALICE WALLER MEMORIAL.—A meeting of subscribers to the fund which has been raised in memory of the late Dr. and Mrs. Augustus D. Waller is to be held at the London (R.F.H.) School of Medicine for Women, on Thursday, July 17th, at 5 P.M. Sir Edward Sharpey Schafer will preside. In inviting contributions the organising committee stated that the Memorial should take the form of a fund for the encouragement of Scientific Research to be administered by the Council of the London (R.F.H.) School of Medicine for Women, and the final arrangements concerning the Memorial will be decided at the meeting. Intending subscribers are asked to send their subscriptions to the Hon. Treasurer, Prof. John Mellanby, St. Thomas's Hospital Medical School, S.E. 1, as soon as possible. £1820 have been subscribed, and it is hoped that the total of £2000 will be reached.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on June 25th, Prof. E. A. Gardner, Yates Professor of Archæology in the University, tenable at University College, was elected Vice-Chancellor for 1924–25 in succession to Mr. H. J. Waring. A cordial vote of thanks was passed to Mr. Waring for the services which he had rendered to the University during his term of office as Vice-Chancellor.—A vote of condolence on the death of Dr. R. M. Walmsley, Chairman of Convocation, was adopted.—The title of Professor of Surgery in the University was conferred on Mr. C. C. Choyce, in respect of his appointment as Director of the Surgical Unit at University College Hospital Medical School.—The title of Professor of Physics

in the University was conferred on Prof. O. W. Richardson, F.R.S., in respect of his part-time appointment as Director of Research in the Department of Physics at King's College. Prof. Richardson will cease to hold the Wheatstone Chair of Physics, which he has occupied since 1914, on taking up the Yarrow Research Professorship of the Royal Society on August 1st next.—Nine grants were made out of the Dixon Fund for the year 1924–25 for researches, among which were the following, to be carried out at the College or Institution designated:—To William E. Downey the sum of £50 for (*a*) the spectroscopic study of luminescences and flames, more particularly that of phosphorus; (*b*) the relation between chemical action and light emission. (Imp. Coll., R.C.S.) To Violet M. Grubb the sum of £20 for the continuation of investigation into the structure and reproduction of certain red and green algæ (more particularly the delimitation of species in *Cladophora* and *Gelidium*, and the investigation of spermatial stages in the *Florideæ*). (Botanical Laboratory, Westfield College.) To Alan S. Parkes the sum of £50 for research on the physiological factors governing the proportions of the sexes in mammals, with the object of finding some means whereby the proportions may be controlled. (Institute of Physiology, University College.) To Eric A. Spaul the sum of £50 to continue experiments with the anterior lobe pituitary gland, and to gain further knowledge of the properties of the active principles of this portion of the gland, and also its biochemical properties. (Zoological Laboratory, Birkbeck College.) To Florence M. Wood the sum of £50 for chemicals and apparatus in connexion with research upon the chemical nature of the cellulose membrane. (Probably Birkbeck College.) To Muriel Bond the sum of £20 for research on "The Dietetic Factors Influencing Reproduction." (Physiological Laboratory, London School of Medicine for Women.)

The following doctorates were conferred:—D.Lit.: C. Delisle Burns (London School of Economics) for a thesis entitled "Psychological Data and Moral Standards in Contemporary Industry." D.Sc. in Physiology: J. A. Hewitt (King's College) for a thesis entitled "Metabolism of Carbohydrates (Part III.)." D.Sc. in Physiology: F. M. R. Walshe (University College and University College Hospital Medical School) for a thesis entitled "(i.) The Physiological Significance of the Reflex Phenomena in Spastic Paralysis of the Lower Limbs; (ii.) On Certain Tonic or Postural Reflexes in Man, with Special Reference to the so-called 'Associated Movements'; (iii.) On Variations in the Form of Reflex Movements, notably the Babinski Plantar response, under Different Degrees of Spasticity and Under the Influence of Magnus and de Kleijn's Tonic Neck Reflex."

Prof. H. R. Kenwood was appointed representative (in respect of University College) at the Tenth Annual Conference of the National Association for the Prevention of Tuberculosis to be held in London in July, 1924.—The Maudsley Hospital has been admitted as a School of the University in the Faculty of Medicine for the purpose of research in psychological medicine.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.—The fifth annual general meeting of the society will take place at the Adam Hall, 12, Stratford-place, London, W., on Thursday, July 10th, at 5.30 P.M., when the President, Sir Auckland Geddes, will deliver his first presidential address. Dr. J. H. Sequeira, Lady Askwith, Captain Walter Elliot, M.P., and Mr. H. Wansey Bayly will also speak.

DIPLOMAS IN PSYCHOLOGICAL MEDICINE. — The Universities of Cambridge, London, Durham, Leeds, Manchester, and Edinburgh, and the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England now grant Diplomas in Psychological Medicine under conditions that are fairly comparable in the standard of the tests and in the duration of the courses. Details can be obtained from the various examination bodies. In London, courses of instruction for the Diploma in Psychological Medicine are given at the Maudsley Hospital, Denmark Hill, which has recently been recognised as a school of the University of London. The course consists of two parts, and is adapted for the Diploma of the Conjoint Board, the University of London, or the University of Cambridge, Part I. being conducted by Sir Frederick Mott, Dr. F. Golla, and Dr. Henry Devine, and Part II. by Sir Frederick Mott, Dr. Bernard Hart, Dr. Golla, Dr. F. C. Shrubsall, Dr. W. C. Sullivan, Dr. C. Hubert Bond, and Dr. E. Mapother. Appointments as clinical assistants are obtainable at the hospital, and the holding of such appointments for varying periods satisfies the requirements of the different examining bodies in respect of practical study of mental disorders. Further particulars as to the lectures should be addressed to the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E. 5, and as to clinical facilities to the medical superintendent of the hospital.

DURHAM UNIVERSITY MEDICAL GRADUATES' ASSOCIATION.—At the annual general meeting of the association, held on June 26th, the following were elected officers for the year 1924–25:—President: Dr. G. de B. Turtle. Vice-Presidents: Dr. A. Parkin and Mr. C. W. Hope. Hon. Secretaries for North and South: Dr. S. W. Davidson and Dr. F. W. M. Pratt respectively. Hon. Treasurer: Dr. W. D. Forrest.

BRITISH ASSOCIATION.—The annual meeting of the British Association for the Advancement of Science to be held in Toronto in August will be under the presidency of Major-General Sir David Bruce. The President will deliver the opening address on August 6th on the Prevention of Disease, and will deal with the experience in this field gained during the war. Five hundred members of the Association will travel to Canada for the meeting, which will begin on August 7th and continue until August 13th. The sectional presidential addresses will include discourses on Chemistry and the State, by Sir Robert Robertson; Inter-Racial Problems and White Colonisation in the Tropics, by Prof. J. W. Gregory; and Academic Freedom in Universities, by Principal Ernest Barker.

ROYAL SANITARY INSTITUTE. — The Thirty-fifth Congress of the Royal Sanitary Institute will be held at Liverpool from July 14th to 19th under the presidency of Lord Salisbury. The Congress will consist of 11 sections, and will deal with many aspects of hygiene, in particular maternity and child welfare, public health education, and the value of voluntary public health work. Food and feeding in their several aspects, including milk in its production and also water-supply, will come under discussion. There is a Conference specially devoted to port sanitary authorities, in which ship sanitation will be discussed. As a practical demonstration of many of the subjects, a large health exhibition is held in connexion with the meeting. Among those who will preside over the different sections are Lieut.-General Sir William Leishman, Dr. T. M. Legge, Dr. E. W. Hope, and Dr. T. W. Naylor Barlow. A large attendance is expected, which will consist mainly of officers and representatives of Government departments, municipal and public health departments in the United Kingdom, and including also many representatives of foreign Governments, dominions, and colonies of the Empire. On July 16th Prof. H. R. Kenwood, of London University, will deliver a popular lecture on Modern Civilisation from the Health Standpoint. Full particulars of the Congress may be obtained from the secretary at the Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W. 1.

THE LATE DR. C. BURLAND.—Dr. Charles Burland, formerly senior medical officer to the Marine Department of the Board of Trade, who died on June 29th at his residence in Southampton at the age of 63, was the eldest son of the late Rev. C. I. Burland, vicar of St. Saviour's, Shanklin. He received his early education on H.M.S. *Conway*, and at Yorkshire College, Leeds, and proceeded to the study of medicine at the University of Edinburgh and in Paris. He qualified L.R.C.P., L.R.C.S. Edin. in 1884, and in 1890 graduated with honours M.D. Brussels. During the South African war he was appointed to the medical charge of invalid troops, and obtained for his services the medal with clasp; later he served as surgeon to the P. and O. and Cunard steamship lines. In 1906 he was appointed Board of Trade medical inspector in Glasgow and for the Western District of Scotland, and in 1909 senior medical officer and Government medical inspector of emigration at the port of Liverpool. Two years later he became chairman of the Advisory Committee on Medical Equipment of Merchant Ships. He was an ex-president of the Brussels Medical Graduates' Association. Dr. Burland contributed several papers to THE LANCET dealing with points in the treatment of symptomatology of various disease conditions. He was also the author of the well-known "Ship Captain's Medical Guide," published by the Board of Trade, which has gone through 16 editions, and in 1919 he composed the official leaflet on How to Keep Clear of Influenza.

MATERNAL MORTALITY. — In a circular letter (No. 517. H.M. Stationery Office. 1*d.*) dated June 30th, addressed to local authorities, the Minister of Health calls special attention to various suggestions for the prevention and remedy of the present high rate of maternal mortality, made by Dr. Janet Campbell in her recent report on this subject, which was discussed in THE LANCET dated April 5th (p. 716) and 19th (p. 809). Of these suggestions adequate provision for antenatal supervision is regarded as of primary importance. Antenatal supervision may be given partly through the doctor or midwife engaged by the patient, but also by means of maternity centres established by the local authority.

There are now in this country some 560 antenatal centres, and there is a need for many more. The provision of maternity beds for the institutional treatment of complicated midwifery cases and for women whose homes are unfit for a confinement to take place therein is another essential part of any scheme designed to lower maternal mortality. As to domestic midwifery and maternity nursing, the Minister holds that maternity nursing by trained midwives should be encouraged whether a doctor is engaged or not, and the employment of unqualified "maternity nurses" should be controlled as far as practicable. The searching investigation of all maternal deaths, of cases of puerperal fever, and of stillbirths and neonatal deaths is regarded as desirable, and educational measures are urged in order that an informed and enlightened public opinion in regard to maternal mortality may be created. The Minister suggests, in conclusion, that medical officers of health should be instructed to report upon the steps considered necessary to provide an efficient maternity service in each area, and he announces his readiness to consider any proposals of the local authority for this purpose which may be submitted for his approval under the Maternity and Child Welfare Act, 1918.

INSULIN: REDUCED PRICES.—The second reading of the Public Health (Scotland) Bill, designed to enable local authorities in Scotland to assist diabetics unable to afford insulin to obtain this remedy, was passed by the House of Commons on July 1st. The reduction in the price of insulin is proceeding so rapidly that legislation may soon be unnecessary. The first insulin made in this country a little over 12 months ago cost 25*s.* for 10 doses. Messrs. Burroughs and Wellcome now inform us that following improved manufacturing methods carried out in their laboratories, they are able to announce a fifth reduction in the price of "Wellcome" Brand Insulin. The British Drug Houses, Ltd., announce a similar reduction in the "A.B." Brand, manufactured jointly by this firm and Allen and Hanburys; and Messrs. Boots and Co., Ltd., of Nottingham, have similarly reduced their price. The new price, which came into force on July 1st, is 2*s.* 8*d.* per phial of 100 units (10 average doses).

Parliamentary Intelligence.

HOUSE OF LORDS.

MONDAY, JUNE 30TH.

LIQUOR (POPULAR CONTROL) BILL.

THE debate was resumed on the amendment for the rejection of the Liquor (Popular Control) Bill, moved by Lord Banbury.

Lord DAWSON said that it was common ground that the consumption of alcohol in this country was far too great, and that the nation spent far too much upon it. But in searching for a cure they needed to be watchful that their proposals did not replace one evil by another. He was not enamoured of the constant quotation of America. He did not like to think that we were so sterile in imagination that we could not find our own remedies for our own social evils. Surely the best remedy was that which was founded upon causes and emotions, and he hoped to show their lordships that this country was not only becoming temperate but in an accelerated degree; and if the conditions which were responsible for the improvement were only fostered and furthered they could face the solution of this dire problem with greater ease of mind than in the past. It might be taken that the opinion of the medical world, both in this country and abroad, was by a very large majority in favour of alcohol as a useful substance, a beneficent agent when taken in proper quantities, at proper times, and by people whom it suited. The majority of the medical profession themselves drank wine, though in strict moderation. It was perfectly true that the action of alcohol was in no way useful to those who were occupied in physical or mental labour. It was further admitted that although it was a food it was an unsuitable and wasteful food to those who were in health. But the action of alcohol on the nervous system was beneficent and useful when taken in proper quantities and at the proper time. It was almost a matter of common knowledge that a glass of alcoholic liquor at the end of the day would lighten the mental horizon, brighten the outlook, and enable a man to drop those grey-coloured spectacles with which he viewed the world after the hardships of the day, and give him content, ease of mind, and happiness. They ought to do nothing which would diminish the cheerfulness and the measure of sociability which was so helpful in helping us along our mortal road. He did not think they were helped forward by denunciations of alcohol as a narcotic. If alcohol was wrong then the whole community ought to give it up. But this Bill was class legislation, which would never interfere with the man who was able to have alcohol in his cellars.

Referring to the evidence afforded by disease regarding the effect of alcohol, Lord Dawson said that if a man had been intemperate and had an accident or was stricken by fever he was liable to develop delirium tremens. If they took the figures of one large hospital for the three decades comprised between the years 1894 and 1923 they found that, beginning at 27·8 per year, they went down to 17·6 in 1904–13 and finally to 10. Taking another well-known disease produced by alcohol—namely, cirrhosis of the liver—for the same three periods the average admissions in the first decade numbered 61·4, in the second 53·2, and in the third 20. Thirdly, there was another disease, more common perhaps among women than among men—viz., alcoholic peripheral neuritis. The figure was 23·8 in the first decade, 14·1 in the second, and 5 in the third. Side by side with those figures he would put the statistics of the consumption of beer for the same years. In the first decade the consumption was 29·52 gallons per head of the population, in the next decade 28·91, in the next 26·66, and when they came down to the last year the figure was 15·80. As to the consumption of spirits, in the first decade the figure was 0·87 gallon per head of the population, for the second decade 0·85, for the third 0·59, and at present 0·31. Quoting from 200 examples of healthy people as afforded in the experience of a big insurance company, Lord Dawson said of those over 40 years of age 21 per cent. took no alcohol, of those under 40, 40 per cent. took no alcohol, and of those who did take it only one-fourth took spirits. He would say leave these restrictive measures alone and proceed on the line that if the people were given better houses, and more recreation grounds, they would do the rest.

The debate was adjourned.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 25TH.

Tuberculous Naval Invalids.

Sir BERTRAM FALLE asked the Parliamentary Secretary to the Admiralty whether any of the tuberculous naval invalids included in the 97·9 percentage for 1923, considered to be non-attributable to service, had questioned the opinion arrived at by naval medical boards; and whether an opportunity would be afforded these men to appeal to an independent tribunal if and when the institution of an appeal tribunal was approved.—Mr. AMMON replied: The answer to the first part of the question is in the affirmative. As regards the second part of the question, the matter is still under consideration.

Naval Lunatic Ratings.

Sir BERTRAM FALLE asked the Parliamentary Secretary to the Admiralty why naval lunatic ratings, whose insanity was attributable to service, had their pensions withheld and appropriated to the cost of their maintenance; and whether he would consider a revision of the regulations, authorising payment of pensions in those cases to their wives or dependents.—Mr. AMMON replied: Under Section 335 of the Lunacy Act (53 Vict. c. 5) the cost of maintenance is a first charge against a lunatic's pension, and the King's Regulations do not permit the concurrent payment of pension and the provision of free maintenance of the pensioner. I am afraid that I cannot consider revision of these regulations in the sense suggested, but I would point out that under present conditions by reason of the higher rate of an "attributable" pension the wives or dependents of men whose disabilities are due to the service receive higher money allowances from Greenwich Hospital funds.

Increase in the Population and Housing.

Mr. ERNEST SIMON asked the Minister of Health whether he was aware of Prof. Bowley's recent estimate that the rate of increase of the population of Great Britain would steadily become less during the next two decades, and that the population would actually become stationary about 1941; and whether he had taken any steps to investigate this estimate, which had so vital a bearing on the question of how many new houses would be needed during the next 15 years.—Mr. WHEATLEY replied: Perhaps I may refer the hon. Member to the very carefully prepared statement by the Registrar-General's department on the factors governing the growth of our population and the tendencies at present discernible, which is contained in Appendix V. of the recently issued report of the Overseas Settlement Committee (Command Paper 2107). The broad conclusions at which the department arrive are that we are at present too near the war and too much involved in the abnormalities resulting from it to attempt with confidence any estimate of the future movement of population, but that there is no safe ground for assuming that there has yet been any

permanent departure from the conditions which during the last 50 years have resulted in a natural increase of approximately 400,000 per annum for Great Britain.

Poor-law Officers and Poor-law Reform.

Mr. LORIMER asked the Minister of Health if, when he set up a departmental committee to consider a report upon the Poor-law administration throughout the country, he would give the Poor-law Officers' Union an opportunity to present their views.—Mr. WHEATLEY replied: There is no present intention of setting up such a departmental committee as is suggested. I have already intimated that I shall be glad to consider any suggestions which the Union may think fit to place before me.

Disinfection of East India Wool.

Mr. WARDLAW-MILNE asked the Minister of Health the intention of the Government regarding the suggested compulsory disinfection of East India wool; whether he was aware that if this regulation was brought into force it was probable that the article secured would be inferior in quality, thus resulting in a serious handicap upon the carpet trade of this country; whether, as it was advisable to put all buyers on equal terms if disinfection was proved to be necessary at all, he would consider the possibility of arranging for this disinfection to be carried out at the source of supply; and if he would suspend the bringing of such an order into force pending full and proper inquiry into the whole matter.—Mr. HENDERSON (Home Secretary) replied: The whole matter is being fully considered and no decision has yet been taken. I am not aware of any foundation for the allegation in the second part of the question.

Public Enlightenment on Venereal Disease.

Mr. SNELL asked the Minister of Health whether the question of the assignment of the sum allocated for public enlightenment regarding venereal disease had yet been settled; whether the Society for the Prevention of Venereal Disease, whose valuable work in the education of the public regarding the medical prevention of venereal disease was universally acknowledged, would receive a share of such a grant; and whether the Ministry of Health had accepted the recommendations contained in the recent report of the committee of inquiry upon the best medical measures for preventing venereal disease in the civil community.—Mr. WHEATLEY replied: The answer to the first part of the question is No. As regards the second and third parts, I can only say that the recommendations contained in the report mentioned in the question are still under consideration.

Smoke Abatement Bill.

Mr. ERNEST SIMON asked the Minister of Health when he proposed to introduce a Smoke Abatement Bill.—Mr. WHEATLEY replied: The Bill will be introduced in another place within the next few days.

Slum Areas in London.

Mr. GILBERT asked the Minister of Health the number of slum areas in the County of London his department had given sanction to for clearance under the Housing Act of last year, and approximately the number of houses, the total area, and the number of persons such clearance schemes had dealt with.—Mr. WHEATLEY replied: Three schemes in the County of London were confirmed in 1923 and 1924, comprising 668 houses, an area of approximately 13 acres, and a population of 3760. Several other schemes are under consideration.

Women in the Ministry of Health.

Mrs. WINTRINGHAM asked the Minister of Health whether, seeing that questions as to the administration of the health insurance benefits of insured women were dealt with in the insurance branch of the Ministry of Health, how many posts there were in this branch above the lower clerical grade; and how many of these posts were filled by women.—Mr. WHEATLEY replied: There are 385 posts in the insurance branch of the Ministry above the lower clerical grade, and of these 94 are held by women. Included in the total of 385 are 222 posts on the outdoor staff of the branch, and of these 59 are held by women.

Hospitals and Public Funds.

Mr. ALFRED T. DAVIES asked the Minister of Health how many London and provincial hospitals were supported, or receive assistance from, public funds, and what are the respective amounts allocated; whether he was aware that over 200 beds were now closed in two hospitals in London alone for want of funds; that over 10,000 persons in London alone had been accepted by the hospitals for operations or treatment and could not be admitted; whether the Ministry had the hospital system of London and the provinces under review; and what it was proposed to do, if anything, to relieve or improve the present state of affairs.—Mr. WHEATLEY replied: The Voluntary Hospitals Commission completed the distribution of the grant from public funds administered by them at the end of the last financial year. No hospitals are now receiving direct assistance from public funds, but many receive from local authorities contributions towards the cost of certain grant-aided services which are subsidised jointly from public and local funds. I am aware that two of the large London hospitals have closed beds, but more than half of the closed beds have at no time been available to the civil population, and have never been occupied except by military patients during the war. I have no exact information as to the extent of the waiting lists, but this is one of the questions now being investigated by the Voluntary Hospitals Commission, who have been asked to report on the extent of the additional accommodation required in voluntary hospitals and the best means of providing and maintaining it.

Assaults on Girls.

Sir THOMAS BRAMSDON asked the Home Secretary if he would explain what was the present position of the departmental committee which he had decided to set up to inquire into the question of assaults on girls; and whether he was in a position to state who the members of that departmental committee would be.—Mr. HENDERSON replied: I regret the delay in setting up this committee, which has been largely due to a difficulty in connexion with the appointment of a chairman. I now hope to be in a position to proceed with the appointment very shortly.

Mercantile Officers and Eyesight Tests.

Mr. BALFOUR asked the President of the Board of Trade whether his attention had been drawn to the fact that executive officers of the mercantile marine might pass Board of Trade standards even if blind in one eye; and, in view of the fact that such a state of things was not consistent with safe navigation and that Germany and other competing nations had a superior physical standard in this matter, whether he would have inquiry made into the matter.—Mr. ALEXANDER replied: Very careful consideration was given, some years ago, to the question whether the Board of Trade sight tests should lay down a standard for each eye, or should allow the standard of form vision required to be reached by a candidate using both eyes together, or either eye separately, at the option of the candidate. The present rule gives this option to the candidate, and accordingly it is possible, as suggested in the question, that a candidate may pass the Board of Trade sight tests even if blind in one eye. I am not aware that any serious consequences have resulted from the present rule, which has been in force since 1912, but if the hon. Member will communicate to me any evidence suggesting that the present rule has had serious consequences, I am prepared to reconsider the general question.

THURSDAY, JUNE 26TH.

Restrictions at Edenhall Hospital.

Mr. CLARKE asked the Minister of Pensions if he was aware that considerable hardship and irritation was being caused by the officer in charge at Edenhall Hospital, Musselburgh, in imposing unnecessary and unreasonable restrictions on the men under his charge and in using questionable methods in applying the regulations dealing with ordinary breaches of discipline; and, if not, would he cause inquiry to be made with a view to securing greater harmony than at present prevails.—Mr. F. O. ROBERTS replied: At a recent inspection of this institution by medical officers, including a neurologist, two cases of complaint were brought forward, but in neither instance was the complaint established. I am not aware of any justification for the general charge made against this officer, whose conduct of the institution, which I have personally inspected within the past few days, appears to be highly efficient. I should add that neurasthenic patients, to whose treatment the hospital in question is devoted, at all times offer special difficulties in management, and the recent medical inspection showed that cases of varying types which could not suitably be associated with others had been admitted to the institution. This has now been put right by the transfer of certain cases to more suitable institutions under the Ministry.

Pensioners and Final Appeals.

Mr. JOHN GUEST asked the Minister of Pensions whether, in view of the failure of many appellants to the final appeals court to understand the medical précis supplied them by the Ministry in preparation for such appeal and also their inability owing to illness or the effect of wounds adequately to present their case, the pension authorities would make some suitable provision by which the appellant in presenting his claim might have the assistance of his local doctor, who was in most instances familiar with the case.—Mr. F. O. ROBERTS replied: Under the rules made by the Lord Chancellor, the tribunal is required to assist any appellant who, through ignorance or otherwise, is unable to make the best of his case. Moreover, the tribunal is empowered at its discretion to summon before it expert or other witnesses to give oral evidence. Any question as to an extension of this provision would be a matter for the consideration of the Lord Chancellor.

Public Health By-laws.

Mrs. WINTRINGHAM asked the Home Secretary how many local authorities had power, under Section 85 of the Public Health Acts Amendment Act, to make by-laws with regard to the public control of agencies for domestic service, and how many had exercised such power.—Mr. HENDERSON replied: 96 cities or boroughs, 72 urban districts, and 2 rural districts have obtained orders declaring Section 85 in force in their areas. By-laws have been made by 38 cities or boroughs, 17 urban districts, and 1 rural district.

Eyesight Test for Omnibus Drivers.

Mr. GODFREY LOCKER-LAMPSON asked the Home Secretary whether the police were making arrangements for an eyesight test for drivers of omnibuses.—Mr. HENDERSON replied: For many years the production of a certificate of physical fitness has been required, and this certificate includes the question of vision.

Appeal Court for Criminal Lunatics.

Mr. COMPTON asked the Home Secretary whether there existed any court of appeal for the inmates of the criminal asylum at Broadmoor similar to the Court of Criminal Appeal provided for prisoners, and if not, will this question be included in the terms of reference for the Royal Commission on Lunacy.—Mr. HENDERSON replied: No, Sir. A verdict of guilty but insane is technically a verdict of acquittal from which no appeal to the Court of Criminal Appeal can lie. The proper authority to consider representations with respect of such a case is the Home Secretary. The answer to the second part of the question is in the negative. Questions of criminal responsibility are, I understand, outside the scope of the Royal Commission on Lunacy.

Royal Commission and Asylum Inmates.

Mr. MCENTEE asked the Prime Minister if he would arrange that adequate facilities be given to the inmates of asylums to bring to the notice of the Royal Commission circumstances and conditions which, owing to the secrecy prevailing in lunacy institutions, did not usually come under the cognisance of the medical officers in charge thereof.—Mr. GREENWOOD replied: It will rest with the Royal Commission to decide what procedure they will adopt to inquire into the points to which my hon. friend refers or receive evidence upon them. The Royal Commission will also have full power to visit mental hospitals in order to acquaint themselves with the conditions prevailing.

Royal Commission on Lunacy.

Mr. ROBERT RICHARDSON asked the Prime Minister if he would give some indication as to how soon it was his intention to appoint the promised Royal Commission to inquire into the defects in the Lunacy Law and administration, and what were to be its composition and terms of reference.—Mr. GREENWOOD replied: A statement was published on Tuesday giving the composition of the terms of reference of the Royal Commission, and a copy will be sent to my hon. friend.

Bad Housing in Southwark.

Mr. NAYLOR asked the Minister of Health if his attention had been drawn to the further comments made by the Southwark coroner on the housing conditions in that borough, and to his suggestion that immediate provision should be made for the clearance of slum property and the erection of temporary accommodation for the persons so displaced, pending the building of houses under the Government scheme; and whether the Minister would consider how the problem of the slum areas could be more effectively provided for.—Mr. GREENWOOD replied: My right hon. friend has received a communication from the Southwark coroner on this matter. The Housing Act of 1923 provides for a Exchequer contribution on a half-and-half basis towards the cost of slum clearance schemes (including the re-housing of the occupants) undertaken by local authorities. Since 1919 11 such schemes have been confirmed in the County of London, and others are under consideration.

Housing in Rural Parishes.

Mr. ERNEST BROWN asked the Minister of Health the number of houses to the acre it was proposed to build in agricultural parishes under the Housing (Financial Provisions) Bill.—Mr. GREENWOOD replied: The matter is primarily one for the local authorities. Under the Housing Acts a cottage provided by a local authority may include a garden of not more than one acre. The general advice given by my department is that in agricultural areas houses should not, unless there are special circumstances, be built at more than eight to an acre.

Treatment of Early Mental Cases.

Mr. ROBERT RICHARDSON asked the Minister of Health how many asylums had been, or are about to be, opened this year; was he aware that the Mental Hospitals' Association reported in 1922 vacancies in public asylums to the extent of 18,000 beds which had apparently been now filled up; and, in view of the increase in insanity thus indicated, an increase undoubtedly traceable to lack of preventive measures, would he reconsider the question of encouraging by Parliamentary grant the provision under health committees, as distinct from asylum committees, of hospitals quite apart from lunacy administration, where uncertifiable cases might have the benefit of such early and appropriate care as might promote their speedy recovery without the risk and detriment of being placed under lunacy control.—Mr. GREENWOOD replied: One new public mental hospital has been or will be opened this year. With regard to the latter part of the question I would refer the hon. Member to the reply given on June 5th.

Officers' Wound Pensions.

Sir THOMAS BRAMSDON asked the Minister of Pensions if, in cases of officers in receipt of pensions for wounds which were certified as not equivalent to the loss of a limb, and which the disabled officer claimed were so equivalent and produced the necessary medical evidence to that effect, he would consider whether it was possible to allow these questions affecting these officers to be dealt with by the House of Lords tribunal, as at present they had no redress further than a pension appeal board.—Mr. F. O. ROBERTS replied: Wound pensions are outside the scheme of final awards and the statutory Final Awards Regulations. They are in the nature of exceptional provision for a particular type of disability not determined by the general scale of assessment for disablement. Wound pensions, like wound gratuities, are administered, not under Ministry warrants, but under regulations common to the service departments and the Ministry of Pensions, and appeals are most carefully considered by a central board, which includes eminent surgeons.

St. Andrew's Mental Hospital, Northampton.

Mr. ROBERT RICHARDSON asked the Minister of Health: (1) In how many cases had a petition prepared by the manager of St. Andrew's Hospital, Northampton, and presented by him to a judicial authority, for an order to detain a voluntary boarder as a lunatic been found, on examination by the Board of Control, to differ from the copy supplied to the Board by the manager under the provisions of Section 316 of the Lunacy Act, 1890; in how many such cases did the statement of a reason for not calling in the boarder's usual medical attendant appear unsigned by the petitioner in the original but signed in his name in the official copy; and in how many was the date of presentation of the petition as given by the petitioner altered in the official copy in such manner as to bring it into conformity with the date of the above-mentioned statement forming part of the petition; what steps had been taken under the direction of the Board of Control to ascertain whether any such false entries were knowingly made or whether they were due to mere accident or oversight; and what disciplinary measures had been taken in either case under the terms of Sections 318 or 320 of the Lunacy Act, 1890. (2) In how many cases in which a petition for a judicial order changing the status of a voluntary boarder at St. Andrew's Hospital, Northampton, to that of a certified lunatic, had been posted by the petitioner to the manager of this private asylum prior to its presentation to a judicial authority, and had been presented by the manager or his agent without having again been in the hands of the petitioner, had such petition been found, on examination by the Board of Control, to contain an entry in the handwriting of the manager or his agent bearing a date subsequent to the date appearing in the handwriting of the petitioner against his signature; and in how many such cases had it been made to appear in the copy sent to the Board of Control that the petitioner signed on the later date, by the substitution in the copy of the later date for the earlier date given by the petitioner against his signature.—Mr. WHEATLEY replied: There has been one such case. As the hon. Member is aware, the details of this case have already received full consideration, not only by the Board of Control, but by the courts; and no disciplinary measures have been deemed necessary.

MONDAY, JUNE 30TH.

Government and the Summer Time Bill.

Sir KINGSLEY WOOD asked the Prime Minister whether the Government would now provide facilities for the Summer Time Bill.—The reply was: The Government have decided to adopt this Bill, which they desire to see passed into law this session.

Cost of Public Health Services.

Lieut.-Colonel HORLICK asked the Chancellor of the Exchequer what was the total cost of our public health services, including that of National Health Insurance and the grants in aid for services administered by the Ministry of Health and the Board of Education; what proportion was paid by the State and what by the local authorities; and whether he could give an estimate of the cost of the proposed revision of the Public Health Acts that was under

consideration.—Mr. W. GRAHAM (Financial Secretary to the Treasury) replied: The statements below give the figures asked for in the first two parts of the question. As regards the last part of the question, the revision of the Public Health Acts, which is now under consideration, is intended primarily as a preliminary to consolidation and there is no reason at present to think that any amendments will result in a material addition to the cost of local administration.

STATEMENT A.—The latest available figures as to the expenditure (other than out of loans) by local authorities in England and Wales on public health services (excluding services carried on by local education authorities) relate to the year 1921–22 and are summarised in the following table:—

Services.	Expenditure (other than out of loans).	Sources from which expenditure was met—		
		Specific receipts in aid of the service—		Rates and other unallocated receipts.
		Fees, tolls, rents, and other receipts not being grants or rates.	Government grants.*	
	£	£	£	£
Sewers and sewage disposal	8,948,025	754,299	219,933	7,973,793
Collection and disposal of house refuse	7,874,393	457,890	11,185	7,405,318
Scavenging and watering of roads and streets	(Approx.) 4,450,000	Not ascertained.	—	(Approx.) 4,450,000
Hospitals, sanatoria, dispensaries, &c., for Tuberculosis	3,338,150	472,820	1,936,564	928,766
Venereal dis.	452,639	10,377	407,277	44,985
Fever, diphtheria, smallpox, &c.	4,320,877	207,597	4,249	4,109,031
Salaries of M.O.H.'s, inspectors of nuisances, health visitors†	1,345,259	9,796	389,174	946,289
Maternity and child welfare	2,003,722	472,423	882,556	648,743
Baths, washhouses, and open bathing places	1,803,912	774,969	11,197	1,017,746
Parks and open spaces	3,920,652	898,064	298,812	2,723,776
Vaccination	178,558	—	10,323	163,235
Port sanitary service	104,639	17,701	45,464	41,474
Cemeteries	1,463,462	901,989	24,088	537,385
Water-supply	16,437,690	12,613,969	32,053	3,791,668
Other health services	1,856,497‡	478,861	6,370	1,371,266
—	58,503,000	18,070,000	4,278,000	36,152,000

* The figures entered under Government grants are in some cases based in expenditure incurred before 1921–22 and *include grants made in respect of schemes of work for the unemployed.* Expenditure in respect of lunatics and lunatic asylums, mental deficiency, Poor-law infirmaries, and other Poor-law institutions for the sick, and housing and town planning is not included above.

† So far as not allocated to specific services.

‡ Includes approximately £15,000 in respect of expenditure on the welfare of the blind.

Public Health Expenditure (Voluntary Agencies).

	Expenditure.	Exchequer share.
Maternity and child welfare	£400,000	£230,000
Welfare of the blind	£450,000	£700,000

STATEMENT B.—*National Health Insurance* (calendar year 1922):—

Expenditure	£26,000,000
Exchequer share	7,500,000

STATEMENT C.—*Board of Education School Medical Service* (1922–23):—

Expenditure	£1,234,000
Exchequer share (approximately)	600,000

Surgeon-Commanders' Pensions.

Dr. SPERO asked the Parliamentary Secretary to the Admiralty whether the increased pensions granted to senior surgeon-commanders, Royal Navy, were regarded as a measure of compensation for their compulsory premature retirement; and if they were liable to a reduction with the fall in the cost of living.—Mr. AMMON replied: The earlier ages of compulsory retirement were introduced as a part of the new scheme of pay and allowances, &c., in 1919. This scheme must be considered as a whole and no particular item of it can be regarded as a set-off against another particular item. The answer to the last part of the question is in the affirmative.

TUESDAY, JULY 1ST.

Age Disqualification and Sickness Insurance.

Mr. WILLIAM HENDERSON asked the Minister of Health whether his attention had been drawn to the fact that workmen over 70 years of age who were in employment paid their national health insurance contributions, though they were not eligible for sickness benefit; and whether, seeing that these men were afraid of losing their employment if they disclosed their age, he would include in the terms of reference to the committee of inquiry into the national health insurance the desirability of permitting persons to draw sick benefit irrespective of age, so long as they continued to pay the insurance contributions.—Mr. GREENWOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is aware of the point raised by my hon. friend. The terms of reference of the Royal Commission would enable the question of the extension of the title to sickness benefit to persons over 70 years of age to be considered.

Remuneration of Army Medical and Veterinary Officers.

Mr. JAMES GARDNER asked the Secretary of State for War whether, seeing that officers of the Army Medical and Veterinary Services who were originally remunerated on a civilian basis were now placed on the army officers' basis, he would take the necessary action to place the emoluments of the officers of the staff for Royal Engineer Services on a military basis; and whether, seeing that the civilian officers of the army chaplain's department, who had always been on the civilian basis, were in 1920 placed on the army officers' basis for retired pay, he would extend the same privilege to the officers of the staff for Royal Engineer Services.—Major ATTLEE (Financial Secretary to the War Office) replied: As regards future entrants, the question of placing their pay and retired pay on a military basis is under consideration. But there is no intention, for the reasons I have already explained, of altering the present basis for the existing permanent officers of the staff for Royal Engineer Services.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Thursday, and Friday, July 9th, 10th, and 11th.

SUB-SECTION OF PROCTOLOGY (Section of Surgery):
Annual Clinical Meeting in conjunction with the American Proctologic Society:—

Wednesday.

11 A.M. Reception by the President (Mr. Aslett Baldwin).
Papers:
Dr. Jackson (President, A.P.S.): "Quo vadis?"
Dr. Beach: The Evolution of Proctology.
5.30 P.M.
Discussion:
The Injection Treatment of Hæmorrhoids, to be opened by Mr. Graeme Anderson.

Thursday.

4.30 P.M.
Discussions:
The Treatment of Pruritus Ani, to be opened by Dr. Montague (New York). The Treatment of Rectal Prolapse, to be opened by Dr. Hirschman (Detroit).

Friday.

4.30 P.M.
Discussion:
The Treatment of Cancer of the Rectum, to be opened by Mr. W. Ernest Miles and Mr. Lockhart-Mummery.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, July 7th, to SATURDAY, July 12th.—ROYAL EYE HOSPITAL, Southwark. Clinical Cases daily at 3 P.M. except Saturdays. Mon., 5 P.M., Mr. T. W. Letchworth: Optic Neuritis. Tues., 5 P.M., Mr. W. J. Lindsay: Squint. Wed., 5 P.M., Mr. A. D. Griffith: Conjunctivitis. Thurs., 5 P.M., Mr. T. W. Letchworth: The Treatment of Epiphora and Mucocele. Fri., 5 P.M., Mr. E. A. Dorrell: Glaucoma.—ST. PETER'S HOSPITAL FOR STONE. Clinical Work and Special Lectures Daily (last week).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, July 7th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Dept.
TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 11 A.M., Mr. Endean: Venereal Diseases. 2 P.M., Dr. Burrell: Medical Out-patients.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.
FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Dept. 2 P.M. Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.
THURSDAY, July 10th.—5 P.M., Mr. Richard Lake: Intra-Cranial Complications of Middle-Ear Diseases. (Geoffrey E. Duveen Lectures in Otology.)

HOSPITAL FOR SICK CHILDREN, Gt. Ormond-street, W.C.
THURSDAY, July 10th.—4 P.M., Mr. Barrington Ward: Intestinal Obstruction.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN.
TUESDAY, July 8th.—5 P.M., Dr. Haldin Davis: Acne.

Appointments.

CASTLE, W. F. L., M.B., Ch.B., has been appointed Assistant House Surgeon, Jessop Hospital for Women, Sheffield.
COBB, G. F., M.R.C.S., L.R.C.P. Lond., Senior Assistant Medical Officer and Deputy Medical Superintendent of the Burntwood County Mental Hospital, near Lichfield, Staffs.
CUBBON, H. T., M.B., B.Ch. Camb., Second Electro-Therapeutist, Royal Sussex County Hospital.
HOBLING, J. H., L.M.S.S.A. Lond., Certifying Surgeon under the Factory and Workshop Acts for Lostwithiel.
LANE-ROBERTS, C. S., M.S. Lond., F.R.C.S. Eng., Obstetric Surgeon to Out-patients, Queen Charlotte's Maternity Hospital.
ROLSTON, J. R., L.R.C.P. Edin., M.R.C.S., Consulting Ophthalmic Surgeon to the South Devon and East Cornwall Hospital, Plymouth.
YOUNG, A., M.B., C.M. Glasg., one of the Medical Referees under the Workmen's Compensation Act for the County of Lanark.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal Mineral Water Hospital.—S.
Birmingham, Queen's Hospital.—Surg. Reg. £100.
Blackburn, Calderstones, Whalley.—Asst. M.O. £440 16*s.* 11*d.*
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—R.M.O.
Coventry and Warwickshire Hospital.—H.P. £150. Also Jun. H.S. £130.
Durham, Richard Murray Hospital, Blackhill.—R.M.O. £400.
Gilbert and Ellice Islands Colony.—Sen. M.O. £650.
Guy's Hospital.—Part-time M.O. in Venereal Dis. Dept. £550.
Guy's Hospital Dental School, London Bridge, S.E.—Sen. Dent. O. and Clin. Tutor. £300.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Gynæcologist.
Hong-Kong University, Faculty of Medicine.—Professor of Obstetrics and Gynæcology. £800.
Hospital for Consumption and Diseases of Chest, Brompton.—R.M.O. and Reg. £500. Also H.P. £50.
Hull City Mental Hospital.—Sen. Asst. M.O., &c. £600.
King's Lynn, West Norfolk Hospital.—Res. Surg. O. £300–£350.
Leeds Public Dispensary.—Sen. Res. M.O. £200.
Leicester Royal Infirmary.—H.P. £125.
Liverpool Royal Infirmary.—Hon. Asst. P.
London Hospital.—Second Reg. to Ear, Nose, and Throat Dept.
Margate, Royal Sea Bathing Hospital.—H.S. £200.
Metropolitan Hospital, Kingsland-road, E.—Asst. Dent. S.
Middlesex Hospital, W.—Res. M.O. £250.
Northampton County Mental Hospital, Berrywood, near Northampton.—Locum Tenen's M.O. £8 8*s.* weekly.
Northampton General Hospital.—Sec. Supt. £400.
Norwich, Norfolk and Norwich Hospital.—Anæsth. £300.
Queen's Hospital for Children, Hackney, E.—Asst. Cas. H.S. £100. Also Asst. S. to Ear, Nose, and Throat Dept.
Royal Army Medical Corps.—20 Commissions.
Royal Chest Hospital, City-road, E.C.—P. to Out-patients.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P. and H.S.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W.—Reg. and Clin. Asst. 100 guineas.
St. Bartholomew's Hospital.—Asst. Administrator of Anæsthetics.
St. Bartholomew's Hospital Medical College.—Demonstrator of Physiology.
St. Mary's Hospital, W.—Cas. H.S. £100.
St. Mary's Infirmary, Highgate-hill.—A.M.O. £350.
St. Thomas's Hospital.—Visiting Anæsth.
Sheffield Children's Hospital.—H.S. £125.
University College Hospital, Gower-street, W.C.—Tub. O. £300.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Ophth. S.
Warrington Infirmary and Dispensary.—Jun. H.S. £175.
West London Hospital, Hammersmith-road, W.—Asst. Anæsth.
Wolverhampton and Staffordshire Hospital.—Pathologist and Bacteriologist. £600.
York City Mental Hospital, Fulford.—Asst. M.O. £440.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Castleton, Yorks, North Riding; and Melling, Lancs.

Births, Marriages, and Deaths.

BIRTHS.

BOWES.—On June 27th, at de Vaux-place, Salisbury, the wife of G. K. Bowes, M.D., M.R.C.P., of a son.
DUNLOP.—On June 19th, at Elm Cottage, Hendon, to Dr. Doris Howard, wife of Dr. W. A. L. Dunlop—a daughter.
GIRDWOOD.—On April 18th, at Johannesburg, the wife of Dr. R. L. Girdwood, of a daughter.
GRANT.—On June 27th, at York, the wife of Major M. F. Grant, R.A.M.C., of a daughter.

MARRIAGES.

WILSON—LAMPORT.—On June 24th, at the Parish Church, Lancaster, by the Rev. J. W. N. Bardsley, vicar, assisted by the Rev. J. L. Gamble, vicar of Milnthorpe, Henry Wilson, *M.C.*, M.B., Ch.B., of "Whitmore," Gatley, Cheshire, son of Henry Wilson, M.R.C.S., and Mrs. Wilson, of Cheadle, Cheshire, to Florence Marjorie Lamport, M.B., Ch.B., younger daughter of H. C. Lamport, M.B., C.M., and Mrs. Lamport of Lancaster.

DEATHS.

DOW.—On June 22nd, at Comely Park House, Dunfermline, William Barrie Dow, M.D., F.R.C.S. Edin., LL.D., in his 89th year.
FERGUSON.—Robert Bruce Ferguson, M.A., M.D. Cantab., D.P.H., &c., at "Marton" Catherine-road, Surbiton, formerly of New Southgate.
PENNY.—On June 22nd, at Liverpool, Dr. Alfred Ferguson Penny, F.R.C.S. Irel., late of Chelsea, in his 59th year.
STEWART.—On June 30th, at Melville-street, Edinburgh, Charles Hunter Stewart, M.B., C.M., D.Sc., Professor of Public Health, University of Edinburgh, aged 69.

*N.B.—A fee of 7*s.* 6*d.* is charged for the insertion of Notices of Births, Marriages, and Deaths.*

A CONVENIENT OPERATION TABLE.

WE have received from Messrs. Mayer and Phelps a descriptive catalogue of recent surgical instruments and appliances of interest to physicians and surgeons. Of these, the "Empire" general operation table now being shown at the Scientific Instrument section of the Palace of Industry at the British Empire Exhibition has been designed with a view to getting the utmost strength and rigidity of construction, combined with simplicity in obtaining the various positions required. The base and tilting gear are each formed of one casting; the frame of the top is of seamless steel tubing, all joints being welded. The top is of phosphor-bronze, and other portions of the table liable to wear are made or covered with the same material. The construction ensures absolute rigidity and stability at any height and in any position, the various parts being carefully machined and the screw gears well-fitted. There are no cog-wheel gears in any part to cause shake. The table stands on four bronze feet, which are capable of adjustment for the purpose of levelling; they are shaped so as to render it an easy matter to slide the table along the floor. The height of the table can be altered while the patient is in any position by means of an oil pump actuated by the foot. The range is from 3 ft. 5 in. in its highest to 2 ft. 9 in. in its lowest, the latter allowing of the correct Trendelenburg position. A kidney bridge is an integral part of the table, being actuated by means of a simple lever giving a direct lift without any complicated gear.

A movable lamp for the operating table is fitted with ball-bearing castors. The lamp consists of an upright and an arm six feet long terminating in a group of four lamps with parabolic reflectors giving a shadowless light of approximately 800 candle power; the base is made sufficiently heavy to give good stability.

OPHTHALMIC BENEFIT COMMITTEE.—A meeting of this committee will take place on July 7th, at 5.30 P.M., in the Council Chamber of the British Medical Association.

Notes, Comments, and Abstracts.

CHRONIC LEAD POISONING AMONG POTTERY WORKERS.[1]

BY FRANK SHUFFLEBOTHAM, M.D. CAMB., M.R.C.P. LOND.,

MEDICAL ADVISER TO THE NATIONAL SOCIETY OF POTTERY OPERATIVES OF GREAT BRITAIN AND IRELAND.

FOR many years past public attention has been attracted to the number of cases of lead poisoning in the pottery industry of this country, and for more than 20 years I have been closely interested in the medical welfare of the men and women who live in the district in which I was born.

The Potteries of North Staffordshire.

Unfortunately, I cannot submit a favourable report with regard to workers engaged in lead processes. Roughly speaking, there are between 60,000 and 70,000 men, women, and girls employed in the pottery industry in this country, and North Staffordshire can be claimed to be the most important pottery centre in the whole world. There are nearly 5000 employees engaged in processes which expose them to lead poisoning. The pottery industry is not confined to England only; it is, next to agriculture, the oldest handicraft, and has been practised in every country alike in ancient and in modern times, and yet the Staffordshire potter has been able to hold his own for hundreds of years in the markets of the world. What applies to Staffordshire applies also to other pottery districts. There are many counties in England, Scotland, Ireland, and Wales where pottery is produced, and where lead processes are involved, but I wish to confine my remarks principally to lead poisoning as found among lead workers in North Staffordshire. It is estimated that in the North Staffordshire district at the present time there are 2600 working in lead processes, 1300 in lead processes of what is called a low solubility glaze, and 800 in what is assumed to be leadless glaze, and the nature of the employment is as follows: Leadhouse men, 100; dippers and ware cleaners, 1650; glost placers, 1900; glost oddmen, 450; majolica paintresses, 150; groundlayers, 150; aerographers, 300.

The leadless glaze factories are mainly those factories which make electric fittings, stilts and spurs, Longton china, and sanitary fire-clay ware. About 10 per cent. of pottery workers are engaged in lead processes, and although the Home Office figures show a reduction in the incidence of lead-poisoning cases, they do not disclose the real facts. I admit that the various investigations that have been made with regard to this industry have prompted the Home Office to make such regulations as have practically wiped out acute cases of lead poisoning; but when a man has worked in lead for 20 years, even under conditions such as the Home Office has laid down, there is not the slightest doubt his employment has exercised a great detrimental influence on his health and shortened his life by many years. The medical men in North Staffordshire have learnt a great deal through the wise action of Mr. Hugh Worthington Adams, the county coroner for the district, in insisting upon post-mortem examinations being made upon all lead workers, and the information so acquired has shown conclusively that life has been shortened and death accelerated as a result of the men's employment in lead processes. Further, by these examinations a great deal of light has been thrown upon the action of lead and lead salts upon the human system.

The Diagnosis of Lead Poisoning.

Lead poisoning cannot be diagnosed at sight like broken arms and broken legs. In view of the fact that there are now practically no cases of acute lead poisoning, those of chronic lead poisoning require very careful investigation. The symptoms of chronic lead poisoning during life are those of general arterio-sclerosis. There is hypertrophy of the heart, a high blood pressure, and the urine invariably shows a low specific gravity. With regard to albuminuria and casts, these are not invariably present, but with the low specific gravity and frequent micturition, especially during the night, a fairly safe conclusion as to the condition of the kidneys can be formed. Among the lead poisoning cases which have been under my care at the North Staffordshire Infirmary, it has been my practice to have the urine for each day collected and samples examined, and even when there has been no doubt that the patient was suffering from lead poisoning, some days elapse before albumin is found in the urine. The high blood pressure may rise to extraordinary heights. I had recently a patient who had been in bed for two weeks, and whose blood pressure rose to 260 mm. Hg and, strange to say, he recovered. A few days ago I examined a lead worker who had travelled four miles to see me and who was undoubtedly suffering from lead poisoning with a blood pressure equal to 200 mm. Hg. Anæmia is a well-known concomitant of lead poisoning, and the examination of the blood shows a diminished percentage of hæmoglobin and frequent basophilic granulation of the red blood corpuscles.

The subjective symptoms of this complaint are headaches, constipation, vomiting, abdominal colic, pains in the arms and legs, shortness of breath, and giddiness. In some cases there is wrist-drop, but I do not think this symptom is as frequent as it was 20 years ago. In view of the fact that acute cases are now practically non-existent, eye trouble does not occur except as a complication of general arterio-sclerosis. Although many manufacturers now use low solubility glazes, and are thereby reducing the risk of lead poisoning among their operatives, yet low solubility glaze is by no means free from danger, and may itself cause lead poisoning in a marked degree. One reason for this may be that the dust arising from a low solubility glaze is composed of much finer particles than that from the ordinary glaze. One case in particular which has come under my notice recently is that of a young woman who had never worked in an ordinary lead glaze, but who worked for about four or five years in a low solubility glaze. She is undoubtedly suffering from lead poisoning, and is, in fact, now receiving full compensation in respect of it.

Lead poisoning is not an untreatable disease. The experience of the physicians at the North Staffordshire Infirmary shows that even a comparatively short treatment with rest in bed, good diet, and a course of suitable medicine effects a marked improvement in the patient's condition.

Medico-legal Aspects of Lead Poisoning.

The medico-legal aspect of lead poisoning is of extreme importance, because in many cases victims of the industry are deprived of their just rights through the unjust laws of this country as embodied in the Factory Act and the Workmen's Compensation Act. The monthly examination by the certifying factory surgeon has undoubtedly had a great beneficial influence on lead workers, both in the pottery industry and in other industries where lead processes are employed; but, on the other hand, the mere fact that the certifying factory surgeon can suspend a lead worker from his employment (in which he may have been engaged for 30 or 40 years) on the ground that he is unsuited to work in lead processes because he is presumed to be suffering from lead poisoning, is a manifest injustice. Under these circumstances the worker can claim no compensation under the Workmen's Compensation Act. The Workmen's Compensation Act does not act fairly towards lead workers. It has been so worded that county court judges, who sympathise with the workers in these dangerous industries, have been rendered helpless. In any dispute between the worker and the employer as to whether the former is suffering from lead poisoning or not, the case must be submitted to a medical referee appointed by the Home Office before the workman can obtain compensation. I contend that a single examination is not sufficient in cases of suspected chronic lead poisoning to decide the matter in dispute. It very often takes me a week to make a decision in doubtful cases, and in most instances I have found it to be to the benefit of the patient that I have delayed my decision.

Post-mortem Aspects of Lead Poisoning Cases.

I have attended all the post-mortem examinations on lead workers in North Staffordshire for some years past, and the principal features in these examinations have been: (1) hypertrophy of the heart with atheroma of the aorta and the aortic valves; (2) granular and contracted kidneys, with very little cortex; (3) in some instances, cerebral hæmorrhage; (4) rarely, constriction of the large intestine; (5) occasionally, blue line round the anus. (In the last ten years I have only seen a blue line round the gums in three cases.)

In conclusion, I wish to say that I am only anxious that what I regard as the most beautiful industry in this country should be worked under conditions such that the men and women employed in it might lead the healthiest lives.

[1] A paper read at the First International Congress of the People's League of Health at Wembley on May 23rd, 1924.

A WELL-ORGANISED EXPEDITION.

A FIRST-AID compartment in charge of trained nurses was a feature of each of the eight special trains which conveyed the employees of Boots Pure Drug Co., Ltd., from Nottingham to Wembley on June 21st. Further precautions taken to ensure the comfort of the party included rooms booked in a London hotel for those who might miss trains, and a special fleet of trams and buses to convey to their homes those employees living in country districts. The arrangements were carried out for the directors, who bore all the expenses, by the Boots Welfare Department under Major T. Knowles.